515 Stockwood Road, Brislington

Interpretive Report on Ground Investigation

Project No: 732959

Client: 515 Stockwood LLP

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STRUCTURAL SOILS LTD

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1 INTRODUCTION

This investigation was carried out by Structural Soils Ltd (SSL) on the instructions of Aspect 360 Ltd (planning consultants) on behalf of 515 Stockwood LLP (the Client) at the site of 515 Stockwood Road, in Brislington, Bristol. The purpose of the work was to obtain geoenvironmental information in order to facilitate the discharge of precommencement planning condition 2 for permission 17/02563/COU relating to the proposed conversion of a three storey block for residential use and further extension of the block with the addition of two storeys. This information is also intended for use to support a future planning application for redevelopment of the car park to the rear for houses and flats.

The purpose of the work was to undertake a Preliminary Risk Assessment that included research in to the past uses of the site and the surrounding area and production of a contamination conceptual model identifying potentially complete pollutant linkages, to investigate ground conditions and to provide information for contamination assessment purposes.

The intrusive works included window sampling, geoenvironmental laboratory testing and the preparation of this report, which contains a description of the site and the works carried out, the exploratory hole logs and laboratory testing results.

It presents an appraisal of geoenvironmental aspects such as soil contamination and gives recommendations on risk reduction. It should not be assumed that these would meet the requirements of the local authority, whose advice should be sought regarding planning permission.

The ground investigation has been carried out in accordance with the general requirements of BS 5930:2015, BS 10175:2011+A1:2013, BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant standards as identified below.

SSL have undertaken two other investigations on this site (see References), the first of which is detailed in our Report 732782 – 515 Stockwood Road, Bristol dated June 2017. This was a small hand excavated trial pit investigation around the existing office to investigate the existing foundations and soils at shallow depth. The second investigation is detailed in our Report 732959 – 515 Stockwood Road, Bristol dated August 2017 and comprising a Coal Mining Risk Assessment.

SSL also investigated a site to the north-west of the subject site Report 00722 - Stockwood Road, dated August 2000.

All information, comments and opinions given in this report are based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

All information, comments and opinions given in the desk study in this report are based on the information obtained. The information search cannot be exhaustive and there

may be records that have not come to light. There may also be circumstances at the site that are not documented.

This report was prepared by Structural Soils Limited for the sole and exclusive use of 515 Stockwood LLP in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded. No liability will be accepted after a period of 6 years from the date of the report.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located at the south-eastern margin of Brislington Business Park; approximately 30 m west of Brislington Park and Ride (see Site Location Map in Appendix A). The British National Grid Reference of the site is ST 625 700.

The site consists of a roughly L shaped plot, orientated with its long axis trending NE-SW, measuring approximately 120 m by 60 m in size (see Exploratory Hole Location Plan in Appendix A). The plot is occupied to the east by a five storey office block with a three storey and a single storey annex; to the north by an electricity substation, kiosk building and garages and to the west by a large, gently undulating, active, secured car park set at an elevation of approximately 53 m above Ordnance Datum (AOD).

The site is secured by a set of electric gates off Stockwood Road to the north-east of the site, through which access to the site is gained, whilst a steel palisade fence is present along the south-east and south-west margins of the site. The north west margin of the site falls within the car park and is marked by a north-east to south-west orientated kerb with street lights. The site is surrounded by a vehicle showroom and office block located along the north-west margin of the site, Stockwood Road and the Brislington Park and Ride to the east, a vehicle garage and residential properties to the south, and warehouse buildings to the west.

A small, well maintained vegetated area of grass, surrounded by a 1.5 m high hedge with a 5 m high deciduous tree are present at the front of the office block adjacent to Stockwood Road. A row of deciduous trees and evergreen bushes that reach a height of approximately 10 to 15 m are present running along the outer south east margin of the site.

Numerous buried services have been located from service plans and during the walkover across the site including electricity cables, foul and storm drainage pipes, water pipes and telecommunications cables. Over 80 manhole covers are present around the office block and car park, some of which have been buried beneath asphalt. Unmarked cables were also identified which could be traced over a short distance heading towards the western margin of the site where a building was once present. A BT mast is present is present at the western corner of the site.

The site and the near surroundings slopes downwards very gently to the south-west.

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

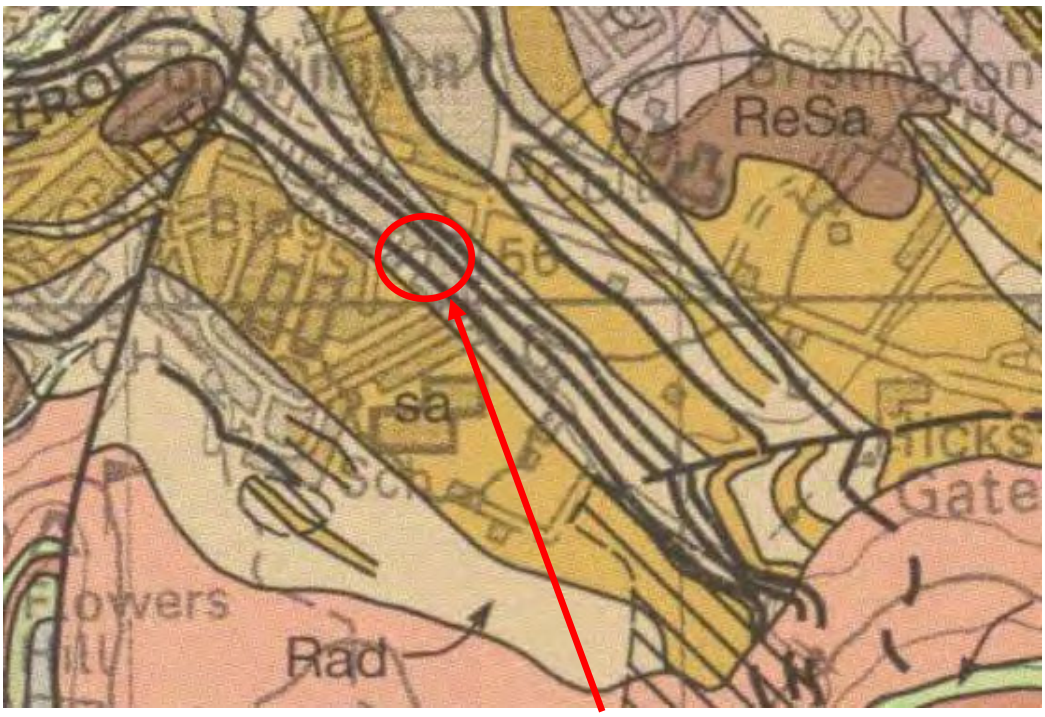
- BGS map (sheet 264, scale 1:50,000, published 2004).
- The BGS digital geology map, which utilises the most up to date names for geological units [redacted]).

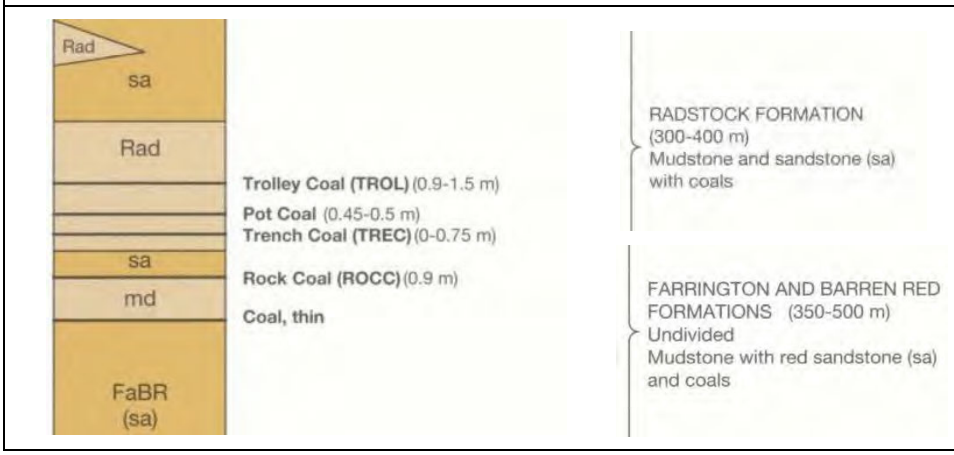
- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units ([redacted]).

The most recent published map shows the site to be underlain by the Radstock Formation, which consists of grey mudstones and sandstones containing numerous thin, muddy coal seams. Online data indicates that the Radstock Formation has been reclassified as a member of the Grovesend Formation, and thus the name Radstock Member is used in this report.

The Pot and Trolley coal seams are indicated to outcrop across the site along a NW – SE orientation whilst the Trench coal seam outcrops close proximity to the NE. The Radstock Member is underlain by the Farrington and Barren Red Formations, which outcrop to the NE beyond and uphill of the Trench coal seam. These formations consist of mudstone with subordinate red sandstone beds and numerous thin coal seams. No artificial ground or superficial deposits are recorded on or around the site.

The BGS online maps portal provides access to scans of almost all maps produced by the BGS since 1932. An extract of the most recent available scanned map for the site is included below:





Note: Above images contain British Geological Survey materials ©NERC [2017].

2.3 Hydrogeology and Hydrology

The Environment Agency (EA) website (http://apps.environment-agency.gov.uk/wiyby/default.aspx) has classified the geological units underlying the site as follows:

- Radstock Member as a Secondary 'A' Aquifer (variably permeable).

'Secondary' aquifers include a wide range of rock layers or superficial deposits with an equally wide range of water permeability and storage. Secondary 'A' Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic

scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

Information on the leaching potential of the soils directly under the site is given on the Environment Agency (EA) groundwater vulnerability map (Groundwater Vulnerability of Southern Cotswolds, sheet 37, scale 1:100,000).

The soils directly beneath the eastern portion of the site have been classed as having a high (H3) leaching potential. These are coarse textured or moderately shallow soils that readily transmit non-adsorbed pollutants and liquid discharges, but which have some ability to attenuate adsorbed pollutants because of their clay or organic matter contents. The soils beneath the western portion of the site have been classified as having a high (urban) leaching potential (HU), as soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. Consequently, a worst-case vulnerability (HU) classification is assumed for these areas and for current mineral workings until proved otherwise. The site is not located with a Source Protection Zone (SPZ).

Groundwater beneath the site is expected to be present within the Radstock Member. Based on the geological mapping this is expected to be a semi-confined aquifer and it is not expected to be recharged by precipitation which infiltrates at the site. Groundwater flow within this unit is expected to be by a combination of intergranular and fissure flow. Flow is anticipated to be towards the south west and the nearest surface water feature in this direction is a small tributary of Brislington Brook approximately 375 m from the site.

2.4 History of Site and Surrounding Area

2.4.1 Historic Mapping

A search of Ordnance Survey maps was undertaken to establish the land-use history of the site and surroundings. Extracts of the maps that are discussed below can be found in Appendix G of this report. Unless otherwise stated, all quoted distances are measured from the site boundary that is marked on the maps.

TABLE 1: SUMMARY OF HISTORICAL MAP DATA			
Dates	**Scale**	**Significant features, changes and developments:**	
		On site	**In surroundings [distance(m)]**
1884	1:10,560 & 1:2,500	Eastern portion of site occupied by farmland. Western and central portion of site occupied by an orchard. Southern portion of site occupied by the butts end of a *Rifle Range.* Small pond in centre of the site.	Site surrounded by farmland. N-S orientated path running along eastern site margin. Possible coal mining pit 100 m N. *Burial Ground* present 60 m to NW. *Well* 70 m NW
1904 - 1920	10,560 & 1:2,500	Rifle Range no longer recorded.	*Quarry* present 345 m to E. Residential development of Brislington to NW. Well no longer shown.
1932 - 1938	10,560	No significant changes.	Industrial buildings constructed 45 m to N. *Engineering Works* present 260 m to the NW. Residential development of Brislington to NW.
1946 - 1955	1:10,560 & 1:1,250	Orchard and farmland cleared. *Warehouse* constructed across portion of W site margin. S portion of site occupied by depot yard.	*Potato Crisp Factory* present 45 m to N. Burial ground present 60 m to NW now disused. *Motor Engineering Works* and *Joinery Works* present 140 – 180 m to NW. *Metal Factory* present 175 m to N. *Brake Lining Works* present 220 and 260 m to NW. *Depots* constructed adjacent to SE and SW site margins. Residential development of Brislington to SW. Coal mining pit 100 m N no longer shown
1950 - 1976	1:10,560 & 1:1,250	Builders yard constructed at SW corner of site. Pond on site no longer recorded. Car park laid at centre of site with access road constructed from E margin. Presumed industrial building constructed near E site	Brislington Trading Estate established: garages, warehouses, paint works, printing works and depots present from northern site margin to 1 km N. Offices constructed 110 m to W. Residential development of

TABLE 1: SUMMARY OF HISTORICAL MAP DATA			
Dates	**Scale**	**Significant features, changes and developments:**	
		On site	**In surroundings [distance(m)]**
		margin.	Brislington to S and SW.
1984 - 1989	1:10,000 & 1:1,250	*Craft Training Centre* constructed adjacent to builders yard at SW corner of site. Warehouse at NW site margin expanded. *Electricity sub-station* present at N site margin. Presumed industrial building constructed near E site margin replaced by current office building and car park. Garages constructed adjacent to sub-station at N site margin.	Expansion of Brislington Trading Estate to N.
1992 - 1994	1:10,000 & 1: 1,250	No significant changes.	Demolition of factories, garages and warehouses 45 m to N. *Brislington Park and Ride* present 30 m to E.
1999	1:10,000 & Aerial Photograph	Possible warehouse building at SE site margin.	Construction of vehicle showroom 45 m to N.
2003 - 2006	1:10,000	Demolition of Craft Training Centre and builders' yard at SW corner of site. Demolition of warehouse at NW site margin.	Construction of warehouse 20 to W.
2017	1:10,000	No significant changes.	No significant changes.

Note: N = north, S = south, E = east, W = west.

2.4.2 Summary of Site History

The historic maps show that by the end of the 19th Century the site was largely greenfield comprising part of an orchard and open field, including a rifle range. A small ~ (10 m by 5 m) pond was present in the centre of the site.

From 1946 to 1984, the site was developed with an industrial building constructed near the eastern site margin, a warehouse built across the north-western margin and a builders' yard present at to the south-west. The remaining land was open ground.

The site was redeveloped between 1984 and 1989 with a craft training centre built adjacent to the builders' yard and the industrial building near the eastern site margin, replaced by an office building with electricity sub-station nearby to the north.

From 1989 to 2003, the site remained relatively unchanged. The 1999 aerial photograph shows a warehouse-like building present at the south-eastern site margin but this is not displayed on the historic maps. The most recent maps show the

warehouse encroaching across the north-western site margin and the builders' yard and craft training centre to have been demolished. These areas are currently used for car parking.

2.4.3 Site History from Other Sources

Our 2000 report described a disused diesel pump (but no tank) being just north of the training centre implying a tank, probably above ground for diesel, was present at some time. An enquiry made to the local authority Contaminated Land Officer did not identify any records of a fuel tank being present but diesel tanks may not be recorded in these archives.

The former tank was therefore probably located somewhere near the north-west edge of the subject site. No indications of a pump or tank were present during the recent site work.

2.5 Environmental Data

Environmental features such as landfills, groundwater abstraction points, etc, are detailed on data sheets that can be found in Appendix G of this report. 'Notable' features in these data sets are listed below.

TABLE 2: SUMMARY OF SIGNIFICANT ENVIRONMENTAL DATA

Data Types Showing Notable Issues	No. of Notable Listings (or Yes/No) and Distance (m) from Site				Details of Notable Listings
	On site	0-250	250-500	>500	
GENERAL					
Local Authority Pollution Prevention and Controls (and enforcements)	-	1	4	3	Transport Brakes Ltd. – 205 m to NE. Brislington Park (Forecourt) Ltd. – 393 m to NW.
Integrated Pollution Prevention & Control (inc Local Authority)	-	1	4	-	Metoxal UK Ltd. Metals and plastics – 131 m to SW. European Friction Industries Ltd. – Asbestos – 450 m to N.
Prosecutions Relating to Authorised Processes	-	-	1	-	Wilverley Industrial Estate - illegal waste dumping – 254 m to NW.
WATER RELATED					
Discharge Consents	-	-	2	27	Wessex Water Services Ltd. - Storm sewage overflow – 256 m to NW and 262 m to NW.

TABLE 2: SUMMARY OF SIGNIFICANT ENVIRONMENTAL DATA					
Data Types Showing Notable Issues	**No. of Notable Listings (or Yes/No) and Distance (m) from Site**				**Details of Notable Listings**
	On site	**0-250**	**250-500**	**>500**	
Nearest Surface Waters	-	Yes	-	-	Drainage channel - 245 m to NE (Up-gradient of site).
Controlled Waters (Pollution Incidents & Prosecutions)	-	-	-	2	Closest: 29/04/1999 – Unknown pollutant – minor incident, 702 m to NW.
Water Abstractions (Licensed)	-	-	-	7	Nearest – Imperial Athletics Club – 1,307 m to W. Surface water for spray irrigation. No groundwater abstractions within 2000 m.
WASTE					
Landfill Sites (recorded by BGS & Local Authority)	-	-	1	1	Stockwood Lane, Brislington – 440 m to SE. West Town Road, Knowle – 868 m to W.
Management and Transfer Sites	-	3	3	-	Wolland Frederick – End of life vehicles - 89 m to SW. All Car Spares Ltd. – Vehicle depollution facility - 138 m to NW. Bewley Alan – End of life vehicles - 198 m to NW.
Treatment and Disposal Sites	-	-	-	1	D. G. Hales - Vehicle scrapyard - 751 m to N.
Potentially infilled land (non-water)			1		Pit/quarry 358 m SE
Potentially infilled land (water)			1	3	Unknown filled ground (water) 380 m E
GEOLOGICAL					
Mining & Natural Cavities	Yes	-	-	-	Area potentially affected by coal mining.
BGS boreholes (on or very near the site)	3	4	-	-	See SSL Coal Mining Risk Assessment Report

TABLE 2: SUMMARY OF SIGNIFICANT ENVIRONMENTAL DATA					
Data Types Showing Notable Issues	**No. of Notable Listings (or Yes/No) and Distance (m) from Site**				**Details of Notable Listings**
	On site	**0-250**	**250-500**	**>500**	
Radon Protection Measures	Yes	-	-	-	The property is in a radon affected area, as 1 - 3 % of properties are above the action level. No radon protection measures are required for new homes.
INDUSTRIAL LAND USE					
Fuel Station Entries	-	1	1	2	Westgate Service Station – 133 m to NE. Brislington Park Service Station – 354 m to N.
Contemporary Trade Directory Entries	1	30	96	116	Arrow Services – Cleaning equipment – on site. Van World – Vehicle dealers – 14 m to SE. Brislington MOT Centre – 47 m to W. Throsper Engineering Co Ltd.- Tool manufacture – 67 m to NW.

Note: N = north, S = south, E = east, W = west.

2.6 Initial Conceptual Model

The information presented in Sections 2.1 to 2.5 has been used to compile an initial conceptual model. The identified potential sources of contamination, associated contaminants and receptors have been considered with plausible pathways that may link them. The resulting potential pollutant linkages are considered in Section 2.6.5. The risk classification has been estimated in accordance with information in Appendix E.

2.6.1 Summary of Potential Contamination Sources

Potential source and their associated contaminants of concern are summarised in Table 3 below.

TABLE 3: SUMMARY OF POTENTIAL SOURCES AND CONTAMINANTS	
On Site (Historical)	**Contaminants of Concern**
Builders Yard	Heavy metals, asbestos, hydrocarbons
Craft Training Centre with diesel pump	Heavy metals, asbestos, hydrocarbons
General Made Ground (including fill in former pond)	Heavy metals, asbestos, hydrocarbons, ground gas (methane & carbon dioxide)
Warehouse	Heavy metals, asbestos, hydrocarbons
Potential Underground Coal Workings	Mine gases (methane & carbon dioxide)
On Site (Current)	**Contaminants of Concern**
Car Park	Fuel hydrocarbons (small scale from leaks)
Office Building	Potential for asbestos in building structure
Electrical Sub-station	PCBs
Off Site	**Contaminants of Concern**
Factories, Depots, Engineering Works and Warehouses (N and NW of site)	Heavy metals, asbestos, hydrocarbons, lubricating oils

2.6.2 Summary of Potential Receptors

Considering the setting of the site and the proposed redevelopment, sensitive receptors are considered to include:

- future site occupants
- adjacent site occupants and users
- potable water supply pipes
- groundwater beneath the site and wider aquifer body

Please note that construction workers have not been identified in the conceptual model as receptors because risks are considered to be managed through health and safety procedures including CDM regulations.

2.6.3 Pathways

Pathways that could results in a potentially complete contaminant linkage include:

- direct contact (soil and dust ingestion, dust inhalation, dermal contact and ingestion of home-grown vegetables)
- Inhalation of vapour

- permeation of plastic water supply pipes
- leaching of contaminants
- entry of methane or carbon dioxide into buildings

2.6.4 Data Gaps and Uncertainty

Although attempts have been made to identify potential sources of contamination, there may be sources or incidents, such as pollution events, that have not been recorded in the historical and environmental records consulted as part of this investigation.

2.6.5 Potentially Complete Contaminant Linkages

The potentially complete contaminant linkages identified for the proposed end use are:

1a. Direct contact by future site residents with soil that may be impacted by heavy metals and hydrocarbons.

1b Direct contact by future site residents with soil that may be impacted by asbestos.

2. Inhalation by future site residents of hydrocarbon vapours.

3. Direct contact of potable water supply pipes with contaminated soils leading to ingress of contaminants or degradation of the pipe.

4. Leaching of contaminants to groundwater in the Secondary 'A' aquifer.

5. Migration and accumulation of carbon dioxide or methane in properties potentially resulting in asphyxiation, fire or explosion.

2.6.6 Risk Estimation for Potentially Complete Contaminant Linkages

The potentially complete contaminant linkages are detailed above with the estimated risk associated with each being detailed in Table 4 below. The risk classification has been undertaken in accordance with CIRIA C552, with a summary of the relevant section being included in Appendix E.

TABLE 4: RISK ESTIMATION FOR POTENTIALLY COMPLETE CONTAMINANT LINKAGES			
Contaminant Linkage	**Likelihood**	**Severity**	**Risk and justification**
1a	Low-likelihood	Medium	Moderate/Low - Proposed development of flats with adjacent soft landscaping and housing with private garden areas in which exposure is possible.
1b	Low-likelihood	Medium	Moderate/Low - Proposed development of flats with adjacent soft landscaping and housing with private garden areas in which exposure is possible.
2	Low-likelihood	Medium	Moderate/Low – Significant hydrocarbon contamination not anticipated, except around former diesel tank near NW boundary of site however if present may pose a risk to future residents.
3	Low-likelihood	Medium	Moderate/Low – It is possible that hydrocarbons may be present in soils on the site which may come into contact with water supply pipes.
4	Low-likelihood	Mild	Low - Leaching of contaminants to groundwater within the Radstock Formation below the site is possible, but groundwater is of limited resource value, and no significant potential sources have been identified on site.
5	Low-likelihood	Severe	Moderate – Migration of mine gas originating from potential underground coal workings into buildings via foundations.

The review of the available information and the production of the initial conceptual model and risk assessment has identified risks associated with potentially complete pollutant linkages that vary from Low to Moderate.

Linkages with risk estimations of moderate or above would typically require further investigation. To further investigate these linkages we have undertaken a ground investigation to collect information on the completeness of these linkages.

3 FIELDWORK

3.1 General

The ground investigation was carried out by SSL between 2 and 3 August 2017. The investigation was supervised by an engineer from SSL. The scope of works and positions were selected and set out by SSL and adjusted where necessary to take account of buried or overhead services, or other restrictions. The exploratory hole and in-situ test locations are shown on the Exploratory Hole Location Plan presented in Appendix A.

3.2 Exploratory Holes

The exploratory holes are listed in the following table.

TABLE 5: SCOPE OF INTRUSIVE WORKS			
Quantity	**Exploratory Hole Type**	**Maximum depth (m)**	**Hole / Test Numbers**
11	Window Sample Boreholes	5.45	WS01 – 05 WS07 – 12

The exploratory hole logs are presented in Appendix B. These provide information including the equipment and methods used, samples taken, tests carried out, water observations and descriptions of the strata encountered. Explanation of the terms and abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, together with other explanatory information.

The holes were logged by an engineer in general accordance with the recommendations of BS 5930:2015 (which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1). Detailed descriptions, together with relevant comments, are given on the logs.

Standard penetration tests (SPT) in the boreholes were carried out in accordance with BS EN ISO 22476-3+A1 (2011) and are presented on the logs in Appendix B as uncorrected ‘N’ values. The SPT hammer energy ratio certificate, a test result summary sheet and ‘N’ value vs. depth plot are presented in Appendix C.

Prior to the commencement of any exploratory hole or intrusive test all positions were checked for buried services by a specialist utility surveyor using a cable avoidance tool (CAT), signal generator (‘genny’), and ground penetrating radar (GPR). The survey was carried out by RSK SafeGround. The excavation of planned hole WS06 was not undertaken due to the indicated presence of a BT fibre optic cable on service plans which was not detected during the buried services survey.

The surveying of exploratory hole positions relative to the British National Grid and ground levels relative to Ordnance Datum has not been requested or undertaken as part of this investigation.

The positions were chosen to give general coverage of the site in relation to the former and proposed uses of the site, with the actual layout of landscaping/garden not being known at this time. Some positions also targeted specific features as follows:

- WS12 was sited to target the former fuel tank near the north-west boundary of the site.

The substation in the north-east corner of the site was not targeted because it is understood that the area around the substation is likely to remain hard covered and not redeveloped and thus unlikely to affect the future residents of the proposed conversion of the office building. Potential for significant contamination from this source is low, but if present should be picked up by the requirements for reporting unexpected contamination during the build.

3.3 Backfill and Instrumentation

On completion 40 mm diameter gas/groundwater monitoring wells were installed in WS01, WS07, WS10 and WS12 the design having been decided by SSL. The installation details are shown on the exploratory hole logs. The remaining boreholes were backfilled with bentonite and arisings.

3.4 Monitoring and Post Fieldwork Environmental Sampling

Groundwater levels were recorded in the monitoring wells on 8, 10, 16 and 23 August 2017 by SSL engineers. The results together with the temporal (weather) conditions are tabulated in Appendix F.

Ground gas monitoring was carried out over the same period. An infrared gas meter was used to measure concentrations of carbon dioxide (CO2), methane (CH4) and oxygen (O2) in percentage by volume. Initial and steady state concentrations were recorded. An integral flow meter was used to measure borehole flow rates (initial and steady state) in litres per hour (l/hr). In addition the atmospheric pressure before and during monitoring.

It should be noted that groundwater levels, gas concentrations and gas flows usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

Groundwater samples were retrieved using a United States Environment Protection Agency (USEPA) approved Low-Flow Purging and Sampling Methodology.

The Low-Flow Purging and Sampling method relies on moving groundwater through the well screen at approximately the same rate as it flows through the geological formation. This results in a significant reduction in the volume of water extracted before sampling and significantly reduces the amount of disturbance of the water in the monitoring well during purging and sampling.

Groundwater levels in the monitoring well and water quality indicator parameters (pH, temperature, electrical conductivity, redox potential and dissolved oxygen) are monitored during low-flow purging, with parameter stabilisation indicating that purging is complete and sampling can begin. As the flow rate used for purging is (in most cases)

the same as or only slightly higher than the flow rate used for sampling, purging and sampling are conducted as one continuous operation in the field.

4 LABORATORY TESTING

Samples for potential geoenvironmental testing were sent to a sister company Envirolab Limited, a MCERTS and UKAS accredited testing laboratory. Laboratory tests were scheduled by Structural Soils Ltd. Tests carried out in accordance with MCERTS/UKAS standards where noted on the results sheets.

4.1 Geoenvironmental Laboratory Testing

The geoenvironmental testing carried out is summarised in the following table. The results are included as Appendix D of this report, and include details of the test method.

TABLE 6: SUMMARY OF GEOENVIRONMENTAL LABORATORY TESTING

Numbers of tests	Description	Notes
SOIL		
9	SSL HHA Screening suite.	Comprises arsenic, cadmium, chromium (total), lead, mercury, selenium, copper, nickel, zinc, speciated polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPH banded 1 with ID), soluble organic matter, soluble sulphate and pH.
23	Asbestos presence screen.	Identification was undertaken if/where asbestos fibres were detected.
2	Spec TPH CWG	Volatile Petroleum Hydrocarbons and extractable petroleum hydrocarbons with criteria working group banding, plus BTEX and MTBE.
WASTE ACCEPTANCE CRITERIA (WAC)		
3	WAC-E suite.	Total waste suite. Single batch test (BS EN 12457-2, L/S 10:1).

5 GROUND CONDITIONS

5.1 General

The exploratory holes were logged by an engineer and the ground conditions encountered are detailed on the logs contained in Appendix B. The exploratory holes encountered the following general descending sequence of strata:

TABLE 7: SUMMARY OF GROUND CONDITIONS

Strata	Exploratory holes encountered in	Depth to top of stratum m bgl	Thickness (m)
Made Ground	WS01 – 05, WS07 - 12	0.00	0.40 – 1.90
Possible Made Ground	WS04, WS09, WS10, WS11	0.55 - 1.25	0.75 – 1.30
Radstock Formation	WS01 – 05, WS07 - 12	0.40 – 2.00	> 0.68

The ground conditions are summarised in more detail below.

5.2 Made Ground

Made ground is present at all exploratory locations and was identified to vary in thickness from approximately 0.40 m to 1.90 m.

Made ground at all exploratory holes, excluding WS07, consisted of a 0.05 to 0.10 m thick layer of asphalt. The asphalt was underlain by a 0.25 to 0.45 m thick sub-base layer composed of orangish brown and light grey clayey, sandy gravels. In WS03 and WS09, a 0.10 m and 0.20 m thick layer of reinforced concrete was present respectively. Beneath the sub-base layer, sporadic areas of reworked dark brown and greyish brown slightly sandy, slightly gravelly clays were present from 0.45 m to 1.60 m. This layer was not identified to be present in WS08 which was terminated due to the presence of a foundation at 0.35 m. Furthermore, in WS10 a layer of asphalt was present between 0.45 and 0.65 m.

WS07 was positioned in the grassed soft landscaping at the front of the office building. Made ground at this position consisted of layers of soft becoming firm, light and blackish brown, slightly sandy, slightly gravelly clays to a depth of 1.90 m. This material might represent backfilling of shallow surface coal workings along the crop.

Anthropogenic components of the made ground included asphalt, concrete, brick, limestone, ceramic fragments, metal rebar and a metal rod along with reworked coal fragments.

5.3 Possible Made Ground

Possible made ground is present in exploratory holes WS04, WS09, WS10, and WS11. This material comprised soft to firm, light grey mottled light brown, slightly sandy, slightly gravelly clay. The gravel consisted of weathered coal and mudstone along with occasional organic matter. The exploratory holes containing the possible made ground are positioned in a roughly linear fashion orientated north-west to south-east across the centre of the site parallel and in close proximity to the approximate position of the Trolley coal seam. This material might also represent backfilling of shallow surface workings along the crop.

5.4 Radstock Member

The made ground and possible made ground was underlain by the Radstock Member which could be subdivided into two layers.

The upper layer was present in all exploratory holes, with the exception of WS08. This layer is approximately 0.50 m – 1.50 m thick and consisted of weathered firm to stiff, light grey mottled reddish brown clay and slightly sandy, slightly gravelly clay. The gravel consists of mudstone and coal fragments.

The lower layer was present commencing at between 1.35 m - 2.70 m depth and consisted of stiff to very stiff, fissured dark grey mottled reddish brown and reddish brown slightly sandy, slightly gravelly clay. The gravel consists of mudstone and coal fragments.

5.5 Groundwater

The fieldworks for this investigation was undertaken during a period of heavy rainfall and surface water was running off the car park surface into WS03, WS08, WS10 and WS12 during drilling.

Water levels in the monitoring wells installed on site were measured (see Section 3). Standing ground water levels varied across the monitoring period as summarised below:

- WS01: 1.57 m – 2.22 m;
- WS07: remained dry for duration of monitoring.
- WS10: 1.73 m – 2.14 m
- WS12: 0.40 m – 0.92 m

The monitoring results are contained in Appendix F.

5.6 Indications of Contamination

Olfactory or visual indications of contamination were noted as summarised below:

TABLE 8: OLFACTORY OR VISUAL INDICATIONS OF CONTAMINATION			
Location of contamination:	**Hole(s) noted in:**	**Depth (m) (range):**	**Comments (e.g. staining, odours (inc strength), sheens, free product, etc):**
Radstock Member	WS03	1.30-1.90	Clay with black rootlet like veins with strong hydrocarbon odour,
Radstock Member	WS12	0.90-1.40	Strong hydrocarbon odour

These locations are in the general vicinity of the former diesel pump noted in the SSL investigation undertaken in 2000.

Olfactory or visual indications of contamination were not identified in any of the other exploratory holes except for the presence of anthropogenic materials within the made ground as discussed in Section 5.2.

6 GEOENVIRONMENTAL SITE ASSESSMENT

6.1 Purpose of the Investigation

The purpose of the work was to obtain geoenvironmental information in order to facilitate the discharge of precommencement planning condition 2 for permission 17/02563/COU relating to the proposed conversion of a three storey block for residential use and further extension of the block with the addition of two storeys. This information is also intended for use to support a future planning application for redevelopment of the west of the study site for houses and flats.

The geoenvironmental site assessment below will be sub-divided in order to examine the potentially relevant pollutant linkages for the office block and for the rear car park. Exploratory holes WS05, WS07, WS08 and WS10 were nominally positioned to investigate potential pollution linkages around the existing office block. The remaining seven exploratory holes were positioned to investigate potential pollution linkages around the rear car park.

6.2 General

In line with CLR11 (EA, 2014), there are two stages of quantitative risk assessment, generic and detailed. The Generic Quantitative Risk Assessment (GQRA) comprises the comparison of soil, groundwater, soil gas and ground gas results with generic assessment criteria (GAC) that are appropriate to the linkage being assessed. This comparison can be undertaken directly against the laboratory results or following statistical analysis depending upon the sampling procedure that was adopted.

6.3 Linkages for assessment

The linkages that required assessment after the findings of the site investigation had been considered are detailed below together with the method of assessment.

TABLE 9: LINKAGES FOR GENERIC QUANTITATIVE RISK ASSESSMENT

Potentially relevant pollutant linkage	Assessment method
1a. Direct contact by future site residents and maintenance workers with soil that may be impacted by heavy metals and hydrocarbons.	Human health GACs in Appendix E for proposed residential use with and without home-grown produce.
1b. Direct contact by future site with soil that may be impacted by asbestos.	No guidelines available.
2. Inhalation by future site residents and adjacent site occupants of hydrocarbon vapours.	Human health GAC In Appendix E take account of the vapour pathway.
3. Direct contact of potable water supply pipes with contaminated soils leading to ingress of contaminants or degradation of the pipe.	Comparison of soil data to GAC in Appendix E for plastic water supply pipes using UKWIR (2010) guidance.

TABLE 9: LINKAGES FOR GENERIC QUANTITATIVE RISK ASSESSMENT	
Potentially relevant pollutant linkage	**Assessment method**
4. Leaching of contaminants into the Secondary 'A' aquifer.	Comparison of groundwater data to Controlled Waters GAC in Appendix E.
5. Migration and accumulation of ground gas in properties potentially resulting in asphyxiation or explosion.	Gas Screening Values compared to the Revised Wilson and Card Classification (residential) presented within CIRIA Report 665 and/or the generic 'Traffic Lights' as presented within the NHBC guidance.

6.3.1 Linkage 1a – Direct contact by future site residents with soil that may be impacted by heavy metals and hydrocarbons

6.3.1.1 General

To determine whether contaminants are present at levels that may be deemed to pose a significant hazard to human health, measured contamination levels in soil at the site are compared directly against derived guideline values ('Tier 2' soil screening). Where contaminants are present above the screening values it is probable that site-specific information will be required to further examine the potential risk of harm arising from such contamination.

The background to the assessment is contained in Appendix E and the findings are summarised in the following pages.

The proposed used of the site is residential, with the existing office building to be converted into flats whilst an application is being prepared to develop the rear car park for houses and flats. The residential without home grown produce generic assessment criteria (GAC) has been used to assess the results from positions around the existing block whilst the residential with plant uptake generic assessment criteria (GAC) have been used to assess the results from positions in the rear car park.

Due to the limited number of samples tested, the results have been assessed against the GAC without the use of statistics.

6.3.1.2 Results

Olfactory and visual indications of contamination are detailed in Section 5.

Except as follows the results did not exceed the guidelines.

TABLE 10: RESULTS ABOVE GUIDELINES				
Land Use - Office Block Converted to Flats				
Exploratory hole	**Depth m**	**Contaminant**	**Result mg/kg**	**GAC Limit mg/kg**
WS07	0.30	Lead	508	310

6.3.1.3 *Conclusion*

The investigation has identified elevated levels of lead in the made ground at the front of the existing office block, which may pose a risk to human health. Hydrocarbons have been identified to be present in soils beneath the rear car park but not concentrations that exceed the human health guidelines.

6.3.2 Linkage 1b – Direct contact by future site residents with soil that may be impacted by asbestos

6.3.2.1 *Results*

Except as follows no asbestos was found in the screening analysis of made ground.

TABLE 11: RESULTS ABOVE GUIDELINES		
Land Use – Car Park Developed for Dwellings with Gardens		
Exploratory hole	**Depth m**	**Contaminant**
WS11	0.40	Amosite cement bound fragment

This fragment of asbestos was identified by eye and was approximately the size of a 50 pence piece.

6.3.2.2 *Conclusion*

The investigation has identified a fragment of cement bound asbestos in made ground in the rear car park proposed for housing with gardens, however no asbestos fibres were detected in any made ground around the office block or beneath the car park, including the soil sample from which the fragment of ACM was taken.

6.3.3 Linkage 2 - Inhalation by future site residents and adjacent site occupants of hydrocarbon vapours

The vapour pathway is included in the GAC assessed above in 6.3.1. No exceedances were found for volatile contaminants in soils around the office block or beneath the car park. Hydrocarbons have been identified to be present in soils beneath the rear car park but at not concentrations that exceed the human health guidelines.

6.3.4 Linkage 3 - Direct contact of potable water supply pipes with contaminated soils leading to ingress of contaminants or degradation of the pipe

6.3.4.1 *General*

It should be noted that at the time of this investigation the future routes of water supply pipes had not been established, hence the investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling/analytical strategy may be required at a later date once the route of the supply pipes is known.

For possible pollutant linkages to proposed water supply pipes, the laboratory test results have been subject to initial assessment against the GAC presented in Appendix E (reproduced from the Table 3.1 of UKWIR).

Full testing has not been undertaken to determine the suitability of metallic pipe materials.

6.3.4.2 *Results*

Except as follows the results did not exceed the UKWIR guidelines.

TABLE 12: RESULTS ABOVE GUIDELINES				
Land Use - Office Block to be Converted to Flats				
Exploratory hole	**Depth m**	**Contaminant**	**Result mg/kg**	**GAC Limit mg/kg**
WS07	0.30	Benzo(a)pyrene	0.69	0.50 for PE pipes
WS07	0.50	Benzo(a)pyrene	1.00	0.50 for PE pipes
WS08	0.20	TPH C21-C40	1070	500 for PE pipes.
Land Use – Car Park to be Developed for Houses and Flats				
Exploratory hole	**Depth m**	**Contaminant**	**Result mg/kg**	**GAC Limit mg/kg**
WS12	1.30	TPH C11-21	105	10 for PE pipes.

Note: PE – Polyethylene (also known as Alkathene or MDPE pipe)

6.3.4.3 *Conclusion*

The investigation has identified made ground in two locations around the existing office block to contain elevated levels of benzo(a)pyrene. Furthermore, elevated levels of TPH (C21-C40) have been identified in WS08, which possibly relates to a high content of asphalt in the made ground. Raised levels of TPH (C11-21) have been identified beneath the car park proposed for dwellings with gardens at WS12. This contamination is possibly heavily weathered and degraded diesel.

6.3.5 Linkage 4 - Leaching of contaminants into the Secondary 'A' aquifer

6.3.5.1 *General*

The site lies over a Secondary A Aquifer. The groundwater results have been compared to the respective GACs, presented in Appendix E. In line with the Environment Agency's Remedial Targets Methodology, the GAC for controlled waters are termed 'Target Concentrations' (TC). In this case since the likely receptor is the Secondary A aquifer the UK Drinking Water Standards have been used to assess the results.

6.3.5.2 *Results*

The groundwater sample collected from WS12 has not exceeded the target concentrations. No significant risks to the wider aquifer have been identified.

6.3.6 Linkage 5 - Migration and accumulation of ground gas in properties potentially resulting in asphyxiation or explosion

6.3.6.1 General

In order to assess the significance of ground gases at the site, measured concentrations (by volume in air) and flow rates have been used to generate Gas Screening Values (GSVs). These have then been compared to the Revised Wilson and Card Classification for the existing office building as presented within CIRIA Report 665 and the generic 'Traffic Lights' for the proposed residential properties with gardens, as presented within the NHBC ground gases guide and CIRIA Report 665.

It is recommended that the gas risk should be assessed by the consideration of pathways to human receptors as follows:

- Gas entering the building through the substructure and building up to hazardous levels

6.3.6.2 Results

The following ground gas parameters have been recorded over four gas monitoring rounds conducted on 8, 10, 16 and 23 August 2017:

- A maximum 'initial' methane concentration of 0%;
- A maximum 'steady state' carbon dioxide concentration of 6.1% (WS07);
- A maximum 'initial' flow rate of 0 l/hr; and
- A maximum 'steady state' flow rate of 0 l/hr.

Groundwater levels are below the solid pipe sections of the wells, thus gas results should be representative of gas conditions in the ground. The monitoring was undertaken over a period of generally moderate or high (>1000 mb) pressure, but included periods of falling pressure.

The worst case Gas Screening Values (GSV) for both methane and carbon dioxide has been calculated for both land uses. In accordance with NHBC guidance (2007) for methane the GSV is calculated using the peak concentration and flow and for carbon dioxide the residual concentrations and flow rates are used.

6.3.6.3 Conclusion

Based upon the results obtained and as no flow has been recorded the GSV's for methane and carbon dioxide have been calculated to be 0 l/hr and 0 l/hr respectively. No methane was recorded however the carbon dioxide maximum concentration is greater than the 5% threshold where industry guidance suggests that gas protection measures should be considered.

In the west of the site where new houses and flats are proposed, it is considered that the gas regime for buildings on shallow foundations is CS1, for which no special precautions are necessary. For any structures that are to be founded on deep piled foundations which may intercept historic coal workings, further work will be required to assess the potential gas risks as there is a risk of creating a pathway for gas movement.

It is understood that the existing office block in the east of the site is likely to be supported on piled foundations due to the presence of deep made ground or broken ground potentially associated with historic coal workings. WS07 in this area proved 1.9 m of generally cohesive made ground, over weathered clays of the Radstock Member.

It is not certain that the source of the carbon dioxide present at this location is a result of the nature of the fill, which is noted to contain coal, or potentially a result of migration from historic coal rich fill or old workings. A gas migration pathway could exist through broken ground, potentially created or modified by the piles for the adjacent building. Coal fill is generally considered a low risk gas source as gas generation rates from such deposits will be very low. Open workings are a more significant risk as they can generate shorter term pulses of hazardous ground gas during periods of falling atmospheric pressure due to expansion of gas in the ground.

The works undertaken for SSL report 732782 included the inspection of foundations exposed internally within the building, and identified that the ground floor slab of the structure was reinforced concrete, overlying variable made ground comprising gravelly clay or slightly clayey gravel. If the piles supporting the building pass down through historic coal workings then there is potential for the gas regime to be different beneath the building than for the remaining locations across the site.

Further work is required to assess this risk to determine if remedial measures are required to be retrofitted to the existing building. It may be possible to agree precautionary remedial measures with the Local Authority in lieu of additional investigation and assessment, but these would have to be necessarily precautionary.

Suitable precautions for an assumed gas regime of Characteristic Situation 2 (CS2) of CIRIA C665) would be likely to include installing a gas resistant membrane across the ground floor and sealing around services and any other penetrations of the floor. Retrofitting may be difficult and the detailing depends on the structure of the building, and would be need to be agreed with the local authority.

The local authority may still require gas monitoring inside the building in order to show the precautions installed were suitable for the actual gas regime under the building.

6.4 Contamination Conclusion on Investigation

Soil contamination has been recorded at the site resulting in complete pollutant linkages. The linkages are summarised below:

- Direct contact by future site residents with soil containing elevated lead concentrations.
- Direct contact by future site residents with soil that may be impacted by asbestos.
- Direct contact of potable water supply pipes with benzo(a)pyrene and TPH contaminated soils.
- Elevated carbon dioxide by offices in the east of the site.

6.5 Remediation and Risk Reduction Recommendations to Date

The Local Environmental Health Officer (and the NHBC if involved) will usually require a 'Validation Report' to confirm that all risk reduction strategies recommended below, and any others subsequently required, have been undertaken.

6.5.1 Direct contact by future site residents with soil that may be impacted by lead or asbestos

Future residential land use in the west of the site

Risks from these contaminants are manifest via the direct contact pathways to future users. Accordingly there is no risk in areas where the site will be hardstanding, roadways or buildings. Risk of direct contact to end users of the site is only possible via areas of gardens and landscaping.

Consideration of the data suggests that the re-worked natural clays below the sub-base type material in the west of the site appears uncontaminated, containing occasional fragment of concrete, mudstone, brick and weathered coal. Accordingly these soils are considered suitable to remain as subsoil in the soft landscaping. If they are locally proven to contain fragments of unsuitable material, such as fragments of glass, metal or asbestos containing material, they would be unsuitable and should be removed.

The overlying shallow granular made ground is not considered appropriate to remain beneath future soft landscaping or garden areas.

In accordance with NHBC recommendations, a minimum of 100 mm of clean topsoil should be provided to act as a growing medium. All imported topsoil and subsoil to be used within the soft landscaping areas should ideally be of known provenance and must be proven to be uncontaminated.

Existing landscaping in the east of the site

The presence of elevated lead concentrations can be managed through the provision of a clean cover system. This could be achieved either by placing uncontaminated soil directly onto the made ground, hence raising ground levels, or by removal of contaminated soil and backfilling with uncontaminated topsoil and subsoil, or by a combination of these means. The cover system is designed to reduce the exposure to contaminants of residents and other site users to an acceptable level. The cover layer should also reduce any risks to plant growth.

The required depth of clean cover can be calculated using BRE report BR465 and this gives a result of 280 mm (spreadsheet presented in Appendix E) but it should be noted that the report states that a minimum of 300mm should always be used. The viability graph shows that simple cover system is suitable. The following assumptions have been made:

- a mixing depth of 600 mm,
- a maximum value of 508 mg/kg for the existing lead contamination and

clean cover concentrations that are a quarter of the guideline values (if actual clean cover concentrations are higher or lower, then the cover thickness will increase or decrease respectively. Any soils used as clean cover should be tested to ensure that

they are uncontaminated in terms of chemical contaminants and also physical contaminants such as asbestos and sharps (e.g. glass, metal, needles, screws, nails etc).

The total thickness of clean cover is subject to council approval and the type of soil should be adequate for plant cultivation. The soils should be tested after being brought to site to confirm that they are uncontaminated and the final thickness of the cover will require validating.

6.5.2 Direct contact by future site residents with soil that may be impacted by asbestos

A 2.5 cm sized amosite asbestos cement fragment was identified at 0.40 m in WS11 at the north west margin of the site. No other asbestos fragments were identified in any of the other exploratory holes across the site nor were asbestos fibres detected in any of the screened made ground samples from around the office block or beneath the car park. This would suggest that any further asbestos fragments present across the site would be present in sporadic areas and at low concentrations.

Asbestos impact currently appears low, however should more significant impact be identified in the soil during development further risk assessment should be undertaken and a safe system of work devised. Asbestos fibres are hazardous to health when released to air and inhaled. Whist work with asbestos in the soil currently appears likely to be of a non-licensed nature, risks associated with working with these soils should be managed in accordance with the principles of CDM Regulations 2015. It should be noted that work with higher risk forms of asbestos, such as loose insulation or large quantities of lower risk forms of asbestos, are licensable under the Control of Asbestos Regulations 2012.

For low risk forms of asbestos, where the quantities are low, and the work is sporadic and low intensity, it is likely to be appropriate to remove it by hand-picking during site works for appropriate disposal as hazardous waste.

6.5.3 Direct contact of potable water supply pipes with benzo(a)pyrene and TPH contaminated soils.

The investigation has identified made ground in two locations around the existing office block to contain elevated levels of benzo(a)pyrene and a third to contain elevated levels of benzo(a)pyrene and TPH (C21-C40). Furthermore, raised levels of TPH (C11-21) have been identified beneath the car park proposed for flats or houses.

Therefore the water supply company may require special pipe materials such as aluminium/polyethylene (Protecta-line or similar) to be used throughout both developments. It is recommended that the test results are presented to the local water supply company to determine the required pipe materials and any additional testing requirements.

Site Safety and Watching Brief

Given the existence of made ground on the site it would be prudent to maintain vigilance during site clearance and construction, in case any suspected contamination is encountered, in which case a suitably qualified person should undertake appropriate sampling, testing and risk assessment

6.6 Off-site Disposal of Surplus Soil

6.6.1 General

All excavated material and excess spoil must be classified for waste disposal purposes prior to disposal at landfill. Under the Landfill (England and Wales) Regulations 2002 (as amended), prior to disposal all wastes must be classified as:

- 'inert', or
- 'non-hazardous', or
- 'hazardous'.

The Environment Agency's *Guidance on the Assessment and Classification of Waste*, Environment Agency, WM3, First Edition May 2015 document outlines the methodology for classifying wastes. Currently all wastes may require pre-treatment prior to disposal at landfill.

6.6.2 Initial Waste Characterisation

Envirolab have produced an assessment tool, 'Haswaste', that characterises contaminated waste soil by following the guidance within WM3. The 'total solid testing' results from this investigation have been run through this assessment tool to aid potential future off-site disposal of materials. This assessment produces an 'initial' characterisation of the waste which determines if it is hazardous or not (if it is 'not' hazardous, then it may be either inert (insoluble and inorganic) or non-hazardous. However, due to complications with the terminology of 'inert waste' it is best not to refer to it as such until after Waste Acceptance Criteria testing).

The assessment is included in Appendix D. Any samples that are classed as hazardous will have yellow cells.

Except as follows the Initial Waste Classification shows that the samples tested are not classed as hazardous.

Any asbestos visible to the naked eye such as the fragment found in the made ground in WS11 at 0.4 is classified as hazardous waste and may be collected and disposed of appropriately, in line with a safe system of work, to reduce disposal costs.

WS08 at 0.2 m showed 1100 mg/kg TPH and is classed as hazardous waste. This is mainly heavy-end TPH C21-40 which is likely to be due to the asphalt present in this sample of granular made ground.

6.6.3 Waste Acceptance Criteria (WAC) Testing

Three waste acceptance criteria tests were conducted on made ground soil samples taken from WS07, WS04 and WS12.

The WAC testing identified the made ground soil sample (WS07) to exceed the total organic carbon (%) WAC inert limit of 3% with a result of 8%. This suggests the made ground from the front of the site in front (east) of the office block can be disposed of as non-hazardous waste if it requires off-site disposal.

The other two samples tested showed results within the WAC-inert limits suggesting these soils may generally be disposed of as inert waste,

Any soils with visible asbestos fragments will be classed as hazardous waste. Also any soils with TPH >1000 mg/kg such as WS08 at 0.2 m mentioned above.

It is important to note that whilst we believe our in-house assessment tool to be an accurate interpretation of the requirements of WM3, thereby producing initial classifications in accordance with it, landfill operators often have their own assessment tools and can often come to a different conclusion. As a result, some landfill operators could even refuse to take apparently suitable waste.

7 SUMMARY

7.1 The purpose of the work was to obtain geoenvironmental information in order to facilitate the discharge of precommencement planning condition 2 for permission 17/02563/COU relating to the proposed conversion of a three storey block for residential use and further extension of the block with the addition of two storeys. This information is also intended for use to support a future planning application for redevelopment of the car park to the rear.

7.2 The geological map shows the site to be underlain by the Radstock Member, which consists of grey mudstones and sandstones containing numerous thin, muddy coal seams. The Pot and Trolley coal seams are indicated to outcrop across the site along a NW – SE orientation whilst the Trench coal seam is located in close proximity to the NE.

7.3 The Environment Agency (EA) website has classified the Radstock Member as a Secondary 'A' Aquifer (variably permeable).

7.4 The historic maps show that by the end of the 19th Century the site was largely greenfield comprising part of an orchard and open field, including a rifle range. A small ~ (10 m by 5 m) pond was present in the centre of the site. Since that time the site has undergone various industrial uses including warehousing, builder's yard, craft training centre and unspecified industrial buildings, before the current office building with electric sub-station nearby to the north.

7.5 SSL previously undertook a wider investigation in 2000 which included a part of the western end of the site at which time a disused diesel pump was present just north of the training centre. This implies a storage tank, probably above ground, has been present but it is not certain if this would have been within the study site boundary.

7.6 The ground investigation was carried out by SSL between 2 and 3 August 2017 and comprised 11 window sample holes. Hydrocarbon odours were noted in WS03 and WS12: these locations are in the general vicinity of the former diesel pump. Olfactory or visual indications of contamination were not identified in any of the other exploratory holes except for the presence of anthropogenic materials within the made ground.

7.7 The investigation has identified elevated levels of lead in the made ground at the front of the existing office block, which may pose a risk to human health in soft landscaped areas.

Therefore, based on BRE 465 a clean soil cover layer 300 mm thick should be provided in the soft landscaping in front of the office. Any soils sourced for the clean cover should be tested or certified to ensure that they are uncontaminated in terms of chemical contaminants and also physical contaminants such as asbestos and sharps (e.g. glass, metal, needles, screws, nails etc).

The total thickness of clean cover is subject to council approval and the type of soil should be adequate for plant cultivation. The proposed imported soils should be tested after they have been brought to site to confirm that they are uncontaminated and the final thickness of the cover will require validating.

7.8 In the west of the site where housing is to be built the re-worked natural clays below the sub-base type material appear uncontaminated, containing occasional fragments of concrete, mudstone, brick and weathered coal. Accordingly these soils are considered suitable to remain as subsoil in the soft landscaping. If they are locally proven to contain fragments of unsuitable material, such as fragments of glass, metal or asbestos containing material, they would be unsuitable and should be removed.

The overlying shallow granular made ground is not considered appropriate to remain beneath future soft landscaping or garden areas. In accordance with NHBC recommendations, a minimum of 100 mm of clean topsoil should be provided to act as a growing medium. All imported topsoil any subsoil to be used within the soft landscaping areas should ideally be of known provenance and must be proven to be uncontaminated.

7.9 A 2.5 cm sized amosite asbestos cement fragment was identified at 0.40 m in WS11 at the north-west margin of the site. No other asbestos fragments were identified in any of the other exploratory holes across the site nor were asbestos fibres detected in any of the screened made ground sampled from around the office block or beneath the car park. This would suggest that any further asbestos fragments present across the site would be present in sporadic areas and at low quantities.

Asbestos impact currently appears low, however should more significant impact be identified in the soil during development further risk assessment should be undertaken and a safe system of work devised. Asbestos fibres are hazardous to health when

released to air and inhaled. Whist work with asbestos in the soil currently appears likely to be of a non-licensed nature, risks associated with working with these soils should be managed in accordance with the principles of CDM Regulations 2015. It should be noted that work with higher risk forms of asbestos, such as loose insulation or large quantities of lower risk forms of asbestos, are licensable under the Control of Asbestos Regulations 2012.

For low risk forms of asbestos, where the quantities are low, and the work is sporadic and low intensity, it is likely to be appropriate to remove by hand-picking during site works for appropriate disposal as hazardous waste.

7.10 The water company may require special pipe materials such as aluminium/polyethylene (Protecta-line or similar) to be used through both developments. It is recommended that the test results are presented to the local water supply company to determine the required pipe materials and any additional testing requirements.

7.11 For the houses and flats proposed in the west of the site it is considered that the gas regime for buildings on shallow foundations is CS1, for which no special precautions are necessary. For any structures that are to be founded on deep piled foundations which may intercept historic coal workings, further work will be required to assess the potential gas risks where there is a risk of pathway creation for gas movement.

7.12 It is understood that the existing office block in the east of the site is likely to be supported on piled foundations due to the presence of deep made ground or broken ground potentially associated with historic coal workings. It is not certain that the source of the carbon dioxide present at this location is a result of the nature of the fill, which is noted to contain coal, or potentially a result of migration from historic coal rich fill or old workings via a pathway through broken ground, potentially created or modified by the piles for the adjacent building. The former is a generally low risk as gas generation rates from such deposits will be very low. Open workings are a more significant risk as they can generate shorter term pulses of hazardous ground gas during periods of falling atmospheric pressure due to expansion of gas in the ground.

Further work is required to assess the gas risk and determine if remedial measures are required to be retrofitted to the existing office building. Suitable precautions for an assumed gas regime of Characteristic Situation 2 (CS2) of CIRIA C665) would be likely to include installing a gas resistant membrane across the ground floor and sealing around services and any other penetrations of the floor. Retrofitting may be difficult and

the detailing depends on the structure of the building, and would be need to be agreed the local authority.

The local authority may still require gas monitoring inside the building in order to show the precautions installed were suitable for the actual gas regime under the building.

7.13 Given the existence of made ground on the site it would be prudent to maintain vigilance during site clearance and construction, in case any suspected contamination is encountered, in which case a suitably qualified person should undertake appropriate sampling, testing and risk assessment

7.14 Except as follows the Initial Waste Classification shows that the samples tested are not classed as hazardous. Any asbestos visible to the naked eye such as the fragment found in the made ground in WS11 at 0.4 m is classified as hazardous waste so should be collected and disposed of appropriately. WS08 at 0.2 m showed 1100 mg/kg TPH and is classed as hazardous waste. This is mainly heavy-end TPH C21-40 which is likely to be due to the asphalt present in this sample of granular made ground.

Three waste acceptance criteria tests were conducted on made ground soil samples taken from WS07, WS04 and WS12. The WAC testing identified the made ground soil sample (WS07) to exceed the total organic carbon (%) WAC inert limit of 3% with a result of 8%. This suggests the made ground from the front of the site in front (east) of the office block can be disposed of as non-hazardous waste if it requires off-site disposal.

The other two samples tested showed results within the WAC-inert limits suggesting these soils may generally be disposed of as inert waste, but noting that any soils with visible asbestos fragments will be classed as hazardous waste, also any soils with TPH >1000 mg/kg such as WS08 at 0.2 m mentioned above.

8 REFERENCES

8.1 BS 5930:2015 *Code of practice for ground investigations*

8.2 BS 10175:2011 *Investigation of potentially contaminated sites: Code of practice*, including amendment A1 2013

8.3 BS EN 1997-2:2007 Eurocode 7 — *Geotechnical design Part 2: Ground Investigation and testing*

8.4 BS EN ISO 22475-1:2006 *Geotechnical Investigation and Testing - Sampling and Groundwater Measurements - Technical Principles*

8.5 Structural Soils Ltd, June 2017. Letter Report 732782 – 515 Stockwood Road, Bristol.

8.6 Structural Soils Ltd, August 2017. Report 732959 – 515 Stockwood Road, Bristol dated August 2017 and comprising a Coal Mining Risk Assessment.

8.7 Structural Soils Ltd, August 2000. Report 00722 – Stockwood Road, Bristol.

8.8 British Geological Survey sheet 264 scale 1:50,000, published 2004

8.9 British Geological Survey online digital geological map, www.bgs.ac.uk/data

8.10 British Geological Survey Lexicon of Named Rock Units, www.bgs.ac.uk/lexicon

8.11 Environment Agency website, www.environment–agency.gov.uk

8.12 Environment Agency Groundwater Vulnerability Map sheet 37 scale 1:100,000

8.13 CIRIA Report C552 (2001), *Contaminated Land Risk Management; A Guide to Good Practice*

8.14 BS EN ISO 14688-1:2002 *Geotechnical investigation and testing – Identification and classification of soil: Part 1: Identification and description*, including Amendment A1 2013

8.15 BS EN ISO 14688-2:2004 *Geotechnical investigation and testing – Identification and classification of soil: Part 2: Principles for a classification*, including Amendment A1 2013

8.16 BS EN ISO 14689-1:2004 *Geotechnical investigation and testing – Identification and classification of rock: Part 1: Identification and description*

8.17 BS EN ISO 22476-3:2005 (updated February 2007) *Geotechnical Investigation and Testing – Field Testing Part 3: Standard Penetration Test*, including Amendment A1 (2011)

8.18 BS EN 12457-2:2002 Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 10l/kg for materials with particle size below 4mm (without or with size reduction).

8.19 R & D Publication CLR 11 (September 2004). *Model Procedures for the Management of Contaminated Land. Contaminated Land*. Environment Agency

8.20 UK Water Industry Research (2010) UKWIR Report 10/WM/03/21. *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (London: UKWIR).

8.21 CIRIA Report C665 *Assessing risks posed by hazardous ground gases to buildings*, London, 2007

8.22 *NHBC Standards (2017)*

8.23 BRE Report 465 (2004) *Cover Systems for Land Regeneration*

8.24 *Construction Design and Management (CDM) Regulations 2015*

8.25 *The Control of Asbestos Regulations 2012*

8.26 *Landfill (England & Wales) Regulations* 2002

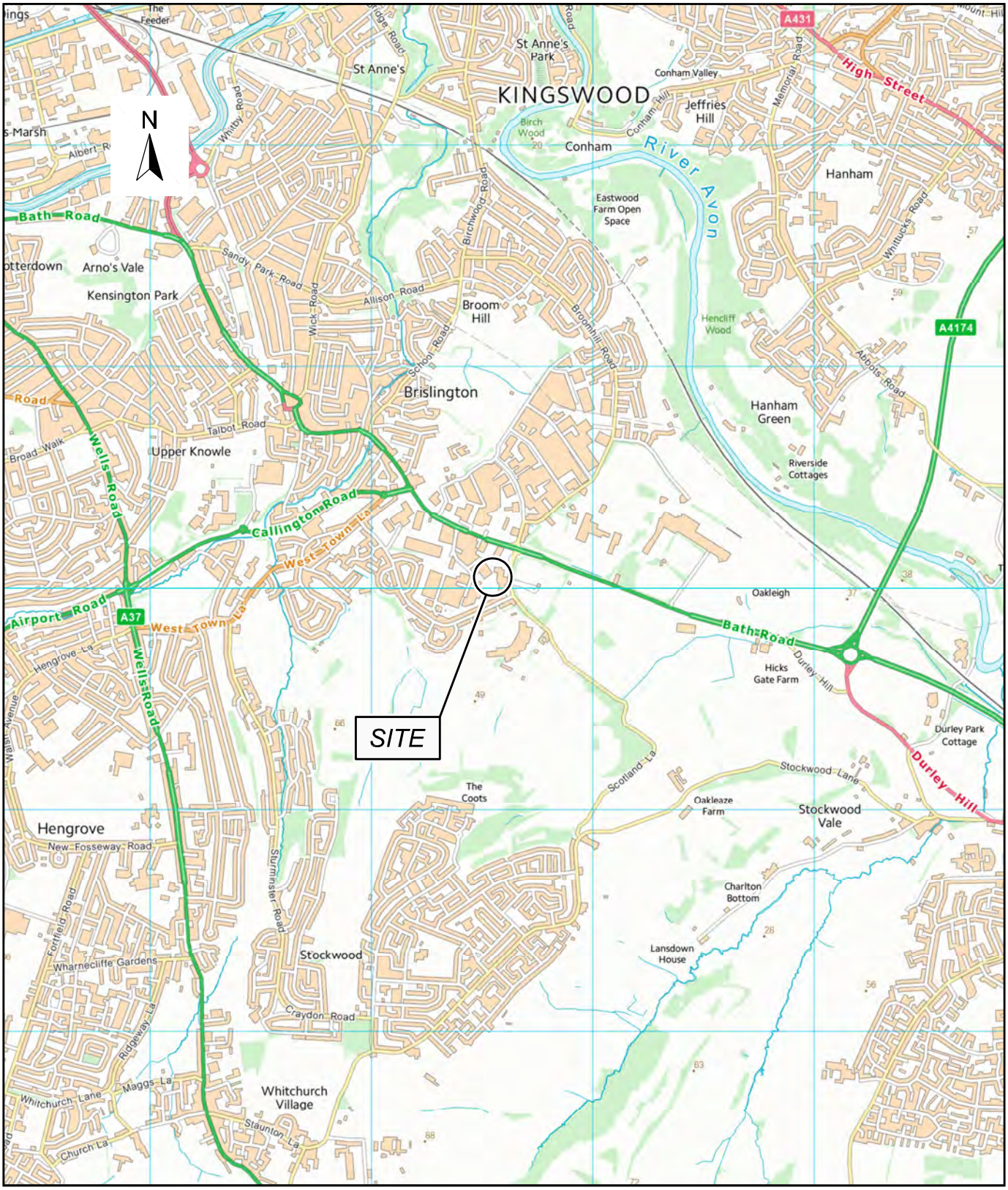
8.27 *Guidance on the Assessment and Classification of Waste, Environment Agency*, WM3, First Edition May 2015

APPENDIX A -
PLANS AND DRAWINGS

(i) Site Location Plan

(ii) Exploratory Hole Location Plan

(iii) Proposed Development Layout Plan



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REV.	DATE	DESCRIPTION	BY	CHD.	APR.
00	01.08.2017	-	NP	JE	-

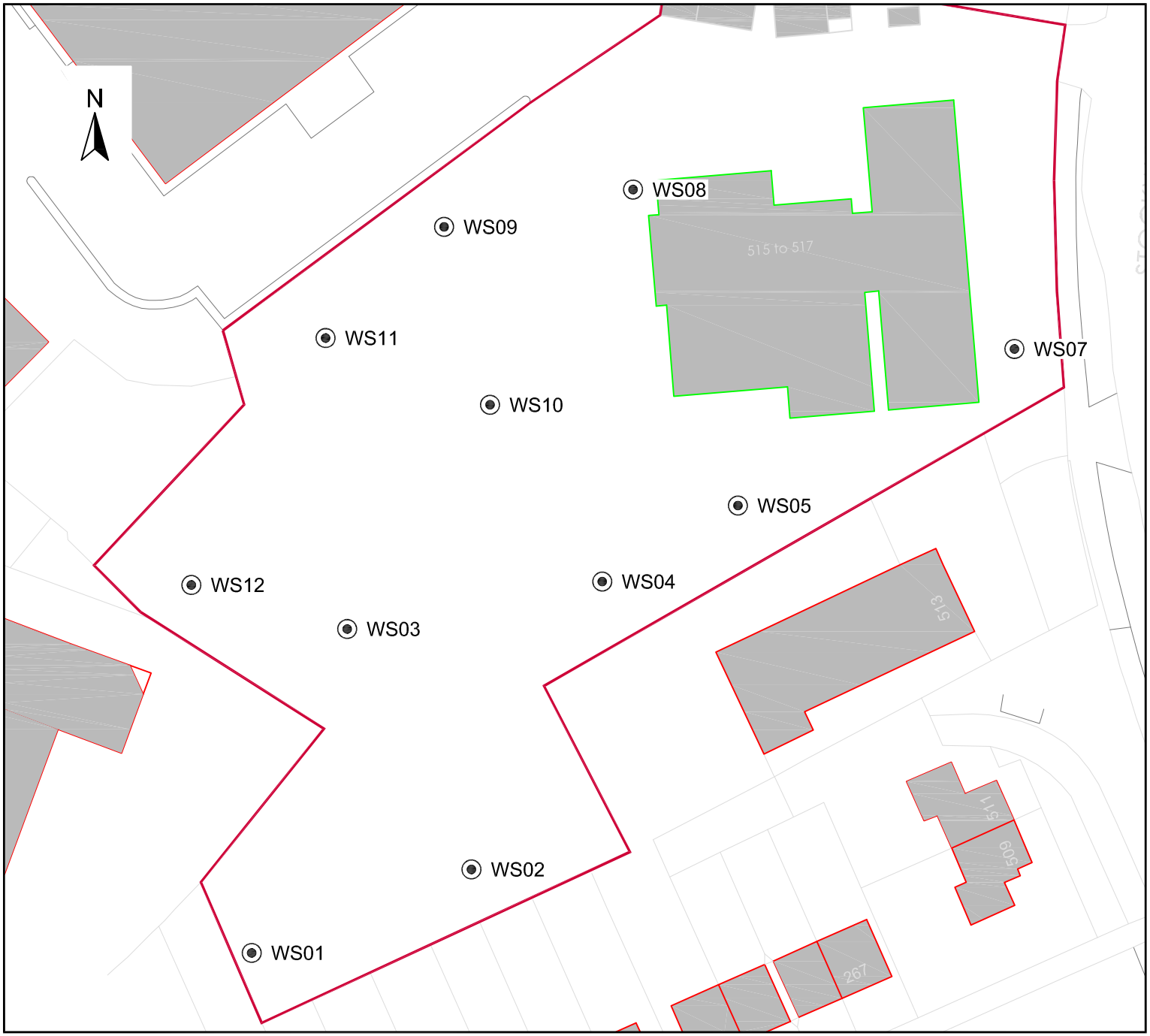
DIMENSION	SCALE	DRAWING STATUS
m	1:25,000	-

CLIENT
515 Stockwood LLP

PROJECT
Stockwood Road, Brislington

TITLE
SITE LOCATION MAP

JOB NO	GRID REF	SCALE BAR	ORIGIN SIZE	FIGURE
732959	ST 625 700	0 250 500 750 1,000m	A4	1



LEGEND

Window Sample Location

REV	DATE	DESCRIPTION	BY	CHD	APR
00	18.08.2017	-	NP	JE	-

DIMENSION	SCALE	ORIGIN SIZE
m	1:600	A4

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CLIENT

515 Stockwood LLP

PROJECT

515 Stockwood Road, Brislington

TITLE

EXPLORATORY HOLE LOCATION PLAN

JOB NO	FIGURE
732959	2
DRAWING STATUS	REV
-	00

SCALE BAR

0 5 10 15 20 25 30m

WOTTON DONOGHUE Architects

Project
515-517 Stockwood Road

Title
Proposed Block Plan

Drawing Number	Revision	Status
904/101	**-**	**Planning**
Scale at A3	Date	Drawn / Checked By
1:500	July 2017	LJ/

Scale suitable for Planning purposes, use only figured dimensions for Construction. Any discrepancies are to be reported to Wotton Donoghue Architects immediately. Prior to the execution of the works on site, all dimensions to be verified on site before any work is put in hand. Copyright reserved to Wotton Donoghue Architects

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APPENDIX B - EXPLORATORY HOLE RECORDS

(i) Key to Exploratory Hole Logs

(ii) Window Sample Logs

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes

B	=	Bulk disturbed sample.
D	=	Small disturbed sample.
DSPT	=	Small disturbed sample originating from SPT test.
ES	=	Soil sample for environmental testing.

IN-SITU TESTING

$SPT_{(c)}$	=	Standard Penetration Test using a solid 60 degree cone.
SPT	=	Standard Penetration Test using split spoon sampler. ($SPT_{(NR)}$ indicates 'No Sample Recovery').
	=	* denotes extrapolated N value. NP denotes 'No Penetration'.
HP	=	Hand Penetrometer Test. Value given as shear strength c_u, in kPa.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1, 14688-2, 14689-1, and BS5930:2015.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. The data on any sheet within the report showing the AGS icon is available in the AGS format.

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Contract Reference: **732959**

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS

First water strike, second water strike etc.

Standing water level following first strike, standing water level following second strike etc.

Seepage.

Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS

CLAY

Clayey sandy GRAVEL

MADE GROUND

Mudstone

Sandy gravelly CLAY

INSTRUMENTATION SYMBOLS

Backfill

Bentonite seal

Concrete

Gravel filter

Flush cover

Plain pipe

Slotted pipe

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS1**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17** End: **02.08.17**	**---**	**---**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.10	1	D				MADE GROUND: Asphalt.	0.10	
	0.10-0.30	2	B				MADE GROUND: Orangish brown clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse ballast. Cobbles of angular limestone.	0.25	
	0.20	1	ES					0.45	
	0.50-0.90	3	B				MADE GROUND: Light grey clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse limestone.		
	0.60	2	ES						
	0.60		HP	c_u=90/95/95			Stiff light grey mottled reddish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone and sandstone. Cobbles of subangular sandstone. (RADSTOCK MEMBER)	(0.90)	
1.20 - 2.00 (101mm dia) 100% rec	1.20-1.65	1	SPT(c)	N=22				1.35	
	1.30	3	ES						
	1.35-2.00	4	D				Very stiff reddish brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular mudstone. (RADSTOCK MEMBER)		
	1.60		HP	c_u=220/225/225					
	1.70	4	ES					(1.10)	
	2.00-2.40	2	SPT	N=83*					
							Window sample hole refused at 2.45m depth.	2.45	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Gas/groundwater monitoring pipe installation to 2.40m depth (1.00m plain, 1.40m slotted and flush cover).
5. Hole backfilled with gravel, bentonite pellets and arisings.
6. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS2**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17**	**---**	**---**	**1** of **1**
	End: **02.08.17**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.30	1	B				MADE GROUND: Asphalt.	0.10	
	0.20	1	ES				MADE GROUND: Orangish brown clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to medium limestone and asphalt.	0.25	
							MADE GROUND: Light yellowish grey clayey sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse ballast. Cobbles of angular limestone.	0.45	
	0.50-0.80	2	B					(0.40)	
	0.60	2	ES						
	0.60		HP	c_u=90/80/80			MADE GROUND: Firm to stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse concrete, brick, mudstone and weathered coal.	0.85	
	0.90-1.20	3	B				Firm to stiff grey mottled orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium weathered coal and mudstone. Occasional rootlets. (RADSTOCK MEMBER)	(0.65)	
	1.00	3	ES						
	1.20-1.65	1	SPT	N=15					
	1.20-1.50	4	D						
	1.30		HP	c_u=80/95/75					
	1.40	4	ES					1.50	
1.20 - 2.00 (101mm dia) 100% rec	1.50-2.00	5	D				Very stiff grey mottled reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse mudstone. (RADSTOCK MEMBER)		
	1.80		HP	c_u=>225/>225/>225					
	2.00-2.45	2	SPT	N=42			. . . from 2.00m friable.		
	2.00	5	ES						
	2.00-3.00	6	D					(1.95)	
2.00 - 3.00 (89mm dia) 100% rec									
	3.00-3.45	3	SPT	N=51					
	3.00	6	ES					3.45	
							Window sample hole refused at 3.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Check By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS3**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17**	**---**	**---**	**1** of **1**
	End: **02.08.17**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.09	
							MADE GROUND: Reinforced concrete.	0.17	
	0.17-0.40	1	B				. . . 6mm circular rebar with 0.21m spacing at 0.16m.		
	0.30	1	ES				MADE GROUND: Greyish brown clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse limestone, concrete and metal rod.	0.40	
	0.40-1.10	2	B				Firm becoming stiff light grey mottled reddish brown CLAY. (RADSTOCK MEMBER)	(1.50)	
	0.80	2	ES						
1.20 - 2.00 (101mm dia) 100% rec	1.20-1.90	3	D				. . . between 1.30m to 1.90m black rootlet like veins emitting strong hydrocarbon odour.		
	1.50	3	ES						
	1.80		HP	c_u=125/120/115				1.90	
	2.00-2.38	2	SPT	N=68*			Extremely weak reddish brown MUDSTONE recovered as very clayey slightly sandy GRAVEL. Sand is fine to coarse. Gravel is angular fine to medium. (RADSTOCK MEMBER)	1.95 (0.50)	
	2.00	4	ES				Very stiff grey mottled reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse mudstone. (RADSTOCK MEMBER)	2.45	
							Window sample hole refused at 2.45m depth.		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt and reinforced concrete with inspection pit dug to 1.20m depth.
3. Hole stable but filling with surface water.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS4**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17**	**---**	**---**	**1** of **1**
	End: **03.08.17**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.12-0.50	1	B				MADE GROUND: Asphalt.	0.12	
	0.20	1	ES				MADE GROUND: Orangish brown slightly clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse limestone, concrete, asphalt and brick.	(0.38)	
	0.50-1.20	2	B					0.50	
	0.80	2	ES				MADE GROUND: Firm light grey mottled light and dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, concrete, coal and mudstone. Occasional organic matter and rootlets.	(0.75)	
	1.20-1.65	1	SPT	N=0				1.25	
1.20 - 2.00 (101mm dia) 100% rec	1.25-2.00	3	D				Very soft becoming soft light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium mudstone and coal. Occasional organic matter. (POSSIBLE MADE GROUND)	(0.75)	
	1.60	3	ES					2.00	
	2.00-2.45	2	SPT	N=45			Stiff becoming very stiff reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium mudstone and weathered coal. (RADSTOCK MEMBER)	(0.68)	
2.00 - 2.30 (89mm dia) 100% rec	2.00-2.30	4	D						
	2.20	4	ES						
	2.30-2.68	3	SPT	N=67*			. . . increasingly friable with depth.	2.68	
							Window sample hole refused at 2.68m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole stable with groundwater seeping into pit at 1.10m depth.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS5**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17** End: **03.08.17**	**---**	**---**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.12	
	0.12-0.50	1	B				MADE GROUND: Orangish brown slightly clayey sandy GRAVEL with high cobble content. Sand is fine to medium. Gravel is angular to subangular fine to coarse limestone, asphalt, concrete and mudstone. Cobbles of subangular ballast and brick.	(0.38)	
	0.20	1	ES					0.50	
	0.50-1.20	2	B				. . . from 0.30m low cobble content.		
	0.80	2	ES				MADE GROUND: Soft becoming firm light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium coal, mudstone and brick. Rare 5mm diameter roots.	(1.10)	
	0.80		HP	c_u=50/50/45					
	1.20-1.65	1	SPT	N=4					
	1.20-1.60	3	D						
	1.30	3	ES						
1.20 - 2.00 (101mm dia) 100% rec	1.50		HP	c_u=50/45/55				1.60	
	1.60-2.40	4	D				Stiff dark grey mottled light brown CLAY with occasional organic matter. Rare rootlets. (RADSTOCK MEMBER)	(0.80)	
	1.80	4	ES						
	1.90		HP	c_u=70/75/75					
	2.00-2.45	2	SPT	N=20					
	2.20		HP	c_u=105/90/85				2.40	
2.00 - 3.00 (89mm dia) 100% rec	2.40-3.00	5	D				Very stiff grey mottled reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone. (RADSTOCK MEMBER)	(1.00)	
	2.70	5	ES						
	3.00-3.40	3	SPT	N=60*			. . . from 3.00m 10mm thick coal lenses present.	3.40	
							Window sample hole refused at 3.40m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	[redacted]

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS7**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17** End: **03.08.17**	**---**	**---**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.20	1	B				MADE GROUND: Grass over soft dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium concrete. Abundant rootlets.	0.20	
	0.10	1	ES						
	0.20-0.40	2	B						
	0.30	2	ES				MADE GROUND: Soft blackish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium concrete, ceramic fragments and weathered coal. Occasional rootlets.	0.40	
	0.40-0.60	3	B					0.60	
	0.50	3	ES						
	0.60-1.20	4	B				MADE GROUND: Soft dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, concrete and weathered coal.		
	0.90	4	ES						
	1.20-1.65	1	SPT	N=21			MADE GROUND: Firm becoming stiff blackish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse concrete, weathered coal, brick and ceramic fragments.	(1.30)	
	1.20-1.90	5	D						
1.20 - 2.00 (101mm dia) 100% rec	1.40	5	ES						
								1.90	
	1.90-2.70	6	D				Firm becoming stiff light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium mudstone. (RADSTOCK MEMBER)	(0.80)	
	2.00-2.45	2	SPT	N=10					
	2.00		HP	c_u=55/50/50					
2.00 - 3.00 (89mm dia) 90% rec	2.50	6	ES						
	2.60		HP	c_u=140/130/145				2.70	
	2.70-4.80	7	D				Stiff becoming very stiff dark grey mottled reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone. (RADSTOCK MEMBER)		
	2.90		HP	c_u=>225/215/>225					
	3.00-3.45	3	SPT	N=23					
3.00 - 4.00 (79mm dia) 100% rec	3.70	7	ES				. . . from 3.70m friable.	(2.10)	
	4.00-4.45	4	SPT	N=48					
4.00 - 5.00 (69mm dia) 100% rec									

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Gas/groundwater monitoring pipe installation to 4.70m depth (0.70m plain, 4.00m slotted and flush cover).
5. Hole backfilled with gravel, bentonite pellets and arisings.
6. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS7**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17**	**---**	**---**	**2** of **2**
	End: **03.08.17**			

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (69mm dia) 100% rec	4.80-5.00	8	D				Extremely weak dark grey partially weathered MUDSTONE. (RADSTOCK MEMBER)	4.80	
	5.00-5.38	5	SPT	N=67*				(0.58)	
							Window sample hole refused at 5.38m depth.	5.38	

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	[redacted]

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS8**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17**	**---**	**---**	**1** of **1**
	End: **02.08.17**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.12	
	0.12-0.35	1	B				MADE GROUND: Light brown slightly clayey sandy GRAVEL with a low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse limestone, asphalt, brick and concrete. Cobbles of angular limestone and concrete.	0.35	
	0.20	1	ES				Window sample hole refused at 0.35m depth due to presence of foundation.		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 0.35m depth.
3. Foundation encountered at 0.35m depth.
4. Hole backfilled with arisings.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS9**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17**	**---**	**---**	**1** of **1**
	End: **03.08.17**			

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.05	
							MADE GROUND: Reinforced concrete.		
	0.25-0.60	1	B				. . . 6mm circular rebar present with 80mm spacing at 0.20m	0.25	
	0.40	1	ES				MADE GROUND: Firm greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse limestone, concrete, brick, mudstone and weathered coal.	(0.35)	
	0.60-1.20	2	B					0.60	
	0.70		HP	c_u=40/40/30			Soft to firm light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine weathered coal. (POSSIBLE MADE GROUND)		
	0.80	2	ES						
1.20 - 1.80 (101mm dia) 100% rec	1.20-1.65	1	SPT	N=4				(1.20)	
	1.20-1.80	3	D						
	1.30		HP	c_u=75/65/80					
	1.50	3	ES						
								1.80	
	1.80-2.25	2	SPT	N=62			Stiff becoming very stiff blackish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium coal and mudstone. (RADSTOCK MEMBER)	(0.45)	
								2.25	
							Window sample hole refused at 2.25m depth.		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt and reinforced concrete with inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS10**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17**	**---**	**---**	**1** of **1**
	End: **02.08.17**			

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.10	
	0.10-0.30	1	B				MADE GROUND: Light brown sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, concrete and asphalt.		
	0.20	1	ES					0.35	
	0.35-0.45	2	B				Cobbles of angular to subangular concrete.	0.45	
	0.40	2	ES				MADE GROUND: Reddish brown very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick and concrete. Cobbles of angular to subangular brick and concrete.	0.60	
	0.60-1.00	3	B						
	0.80	3	ES				MADE GROUND: Asphalt.		
	1.00		HP	c_u=45/40/40			Soft to firm light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone and weathered coal. (POSSIBLE MADE GROUND)	(1.30)	
	1.20-1.65	1	SPT	N=4					
	1.20-1.90	4	D						
1.20 - 2.00 (101mm dia) 100% rec	1.50		HP	c_u=80/75/65					
	1.60	4	ES					1.90	
	1.90-3.35	5	D				Stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone with coal fragments present from 3.00m depth. (RADSTOCK MEMBER)		
	2.00-2.45	2	SPT	N=23					
2.00 - 3.00 (89mm dia) 100% rec	2.50	5	ES		≈			(1.45)	
	3.00-3.45	3	SPT	N=22					
							. . . increasingly friable with depth.	3.35	
3.00 - 3.60 (79mm dia) 100% rec	3.35-3.60	6	D				Very stiff to friable brownish black slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse coal. (RADSTOCK MEMBER)		
	3.60-3.98	4	SPT	N=67*				(0.63)	
								3.98	
							Window sample hole refused at 3.98m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole stable with groundwater at 2.80m depth.
4. Gas/groundwater monitoring pipe installation to 2.40m depth (1.00m plain, 1.40m slotted and flush cover).
5. Hole backfilled with gravel, bentonite pellets and arisings.
6. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS11**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**03.08.17** End: **03.08.17**	**---**	**---**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt.	0.17	
	0.17-0.25	1	B				MADE GROUND: Orangish brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular fine to coarse asphalt, brick and concrete.	0.25 (0.30)	
	0.20	1	ES						
	0.25-0.55	2	B				MADE GROUND: Firm brownish black slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to medium brick, coal and mudstone.	0.55	
	0.40	2	ES						
	0.55-1.20	3	B				Soft becoming firm light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium mudstone and coal. Rare organic matter. (POSSIBLE MADE GROUND)	(1.25)	
	0.80	3	ES						
1.20 - 2.00 (101mm dia) 100% rec	1.20-1.65	1	SPT	N=7				1.80	
	1.20-1.80	4	D						
	1.40	4	ES						
	1.40		HP	c_u=55/45/40					
	1.80-2.55	5	D				Stiff becoming very stiff reddish brown mottled grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone. (RADSTOCK MEMBER) . . . from 2.00m friable.	(1.15)	
2.00 - 2.55 (89mm dia) 100% rec	2.00-2.45	2	SPT	N=25					
	2.00		HP	c_u=115/100/95					
	2.20	5	ES						
	2.55-2.95	3	SPT	N=60*			. . . from 2.52m to 2.55m black coal recovered as angular to subangular fine to coarse gravel.	2.95	
							Window sample hole refused at 2.95m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole dry and stable.
4. Hole backfilled with bentonite pellets and arisings.
5. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	[redacted]

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
515 Stockwood Road, Brislington	**515 Stockwood LLP**	**WS12**

Contract Ref:	Start:	Ground Level:	Co-ordinates:	Sheet:
732959	**02.08.17** End: **02.08.17**	**---**	**---**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00	1	B				MADE GROUND: Asphalt.	0.12	
	0.20	1	ES				MADE GROUND: Greyish brown clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse asphalt, limestone and concrete. Cobbles of angular concrete.	0.25	
	0.40-1.00	2	B						
	0.40		HP	c_u=80/80/95				(0.65)	
	0.60	2	ES				MADE GROUND: Firm to stiff light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone, brick and weathered coal.	0.90	
							Firm becoming stiff light grey mottled light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium mudstone and weathered coal. Strong hydrocarbon odour.	(0.50)	
	1.20-1.65	1	SPT	N=14			(RADSTOCK MEMBER)	1.40	
	1.20-1.40	3	D						
	1.20		HP	c_u=70/75/65					
	1.30	3	ES						
1.20 - 2.00 (101mm dia) 100% rec	1.40-2.50	4	D				Stiff becoming very stiff dark grey mottled reddish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone. (RADSTOCK MEMBER)		
	1.80	4	ES						
	1.80		HP	c_u=>225/>225/>225					
	2.00-2.45	2	SPT	N=28				(1.48)	
2.00 - 2.50 (89mm dia) 100% rec					≈		. . . increasingly friable with depth.		
	2.50-2.88	3	SPT	N=67*				2.88	
							Window sample hole refused at 2.88m depth.		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Area cleared by GPR, CAT and Genny.
2. Break out asphalt with inspection pit dug to 1.20m depth.
3. Hole stable with groundwater at 2.35m depth.
4. Gas/groundwater monitoring pipe installation to 2.40m depth (1.00m plain, 1.40m slotted and flush cover).
5. Hole backfilled with gravel, bentonite pellets and arisings.
6. SPT hammer DT16208-2017 (E_r = 65.13%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Dando Terrier**	**Josh Parratt**	**JCEvans**	

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APPENDIX C -
IN-SITU TESTING

(i) Standard Penetration Test (SPT) Summary Sheet

(ii) SPT Hammer Calibration Records

(iii) SPT N value versus Depth Plot

(iv) SPT $N_{(60)}$ value versus Depth Plot

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
WS1	1.20	101		DRY	3,3	150	3,6,6,7		N=22	DT16208-2017	05/12/2016	65.13	24	SPT(c)
	2.00	101		DRY	6,9	150	10,14,20,25+	250	N=83*	DT16208-2017	05/12/2016	65.13	90	
WS2	1.20	101		DRY	3,3	150	3,4,4,4		N=15	DT16208-2017	05/12/2016	65.13	16	
	2.00	101		DRY	7,7	150	9,11,10,12		N=42	DT16208-2017	05/12/2016	65.13	46	
	3.00	101		DRY	4,7	150	11,14,11,15		N=51	DT16208-2017	05/12/2016	65.13	55	
WS3	2.00	101		DRY	7,9	150	14,18,19	225	N=68*	DT16208-2017	05/12/2016	65.13	74	
WS4	1.20	101		DRY	0,0	150	0,0,0,0		N=0	DT16208-2017	05/12/2016	65.13	0	
	2.00	89		DRY	7,7	150	9,12,12,12		N=45	DT16208-2017	05/12/2016	65.13	49	
	2.30	89		DRY	9,9	150	14,22,14	225	N=67*	DT16208-2017	05/12/2016	65.13	73	
WS5	1.20	101		DRY	0,0	150	1,1,1,1		N=4	DT16208-2017	05/12/2016	65.13	4	
	2.00	89		DRY	1,1	150	3,5,5,7		N=20	DT16208-2017	05/12/2016	65.13	22	
	3.00	89		DRY	3,9	150	12,17,17,4+	250	N=60*	DT16208-2017	05/12/2016	65.13	65	
WS7	1.20	101		DRY	3,4	150	5,5,6,5		N=21	DT16208-2017	05/12/2016	65.13	23	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005, including amendment A1 (2011).
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Contract Ref:
[redacted] **JONATHANEVANS**	**31.08.17**	**732959**
Contract: **515 Stockwood Road, Brislington**		Page: **1** of **3**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
WS7	2.00	89		DRY	2,1	150	1,2,3,4		N=10	DT16208-2017	05/12/2016	65.13	11	
	3.00	79		DRY	3,5	150	5,6,6,6		N=23	DT16208-2017	05/12/2016	65.13	25	
	4.00	69		DRY	5,6	150	7,11,14,16		N=48	DT16208-2017	05/12/2016	65.13	52	
	5.00	69		DRY	7,12	150	13,19,18	225	N=67*	DT16208-2017	05/12/2016	65.13	73	
WS9	1.20	101		DRY	1,1	150	1,1,1,1		N=4	DT16208-2017	05/12/2016	65.13	4	
	1.80	101		DRY	3,7	150	12,16,17,17		N=62	DT16208-2017	05/12/2016	65.13	67	
WS10	1.20	101		DRY	1,1	150	1,1,1,1		N=4	DT16208-2017	05/12/2016	65.13	4	
	2.00	89		DRY	3,7	150	6,6,5,6		N=23	DT16208-2017	05/12/2016	65.13	25	
	3.00	89		DRY	3,4	150	4,5,6,7		N=22	DT16208-2017	05/12/2016	65.13	24	
	3.60	79		DRY	7,7	150	15,18,17	225	N=67*	DT16208-2017	05/12/2016	65.13	73	
WS11	1.20	101		DRY	2,2	150	2,1,2,2		N=7	DT16208-2017	05/12/2016	65.13	8	
	2.00	89		DRY	4,6	150	6,6,6,7		N=25	DT16208-2017	05/12/2016	65.13	27	
	2.55	89		DRY	3,9	150	14,15,15,6+	250	N=60*	DT16208-2017	05/12/2016	65.13	65	
WS12	1.20	101		DRY	2,2	150	2,3,4,5		N=14	DT16208-2017	05/12/2016	65.13	15	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005, including amendment A1 (2011).
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By: [redacted] **JONATHANEVANS**

Date: **31.08.17**

Contract Ref: **732959**

Contract: **515 Stockwood Road, Brislington**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
WS12	2.00	89		DRY	4,6	150	7,7,7,7		N=28	DT16208-2017	05/12/2016	65.13	30	
	2.50	89		DRY	3,8	150	12,14,24	225	N=67*	DT16208-2017	05/12/2016	65.13	73	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005, including amendment A1 (2011).
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and extrapolated N value (N*) reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Contract Ref:
[redacted] **JONATHANEVANS**	**31.08.17**	**732959**

Contract: **515 Stockwood Road, Brislington**

SPT Calibration Report

EQUIPE GROUP
www.equipegroup.com

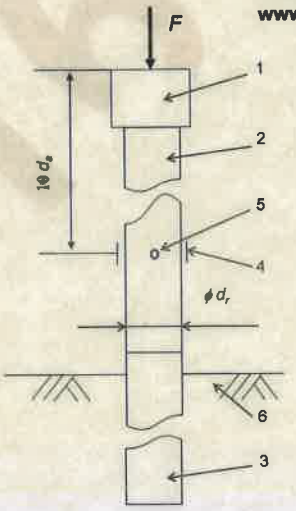
Hammer Energy Measurement Report

Type of Hammer	TERRIER
Client	STRUCTURAL SOILS
Test No	EQU1651
Test Depth (m)	8.50
Date of Test	05 December 2016
Valid until	05 December 2017
Hammer ID	DT/16208

Mass of the hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

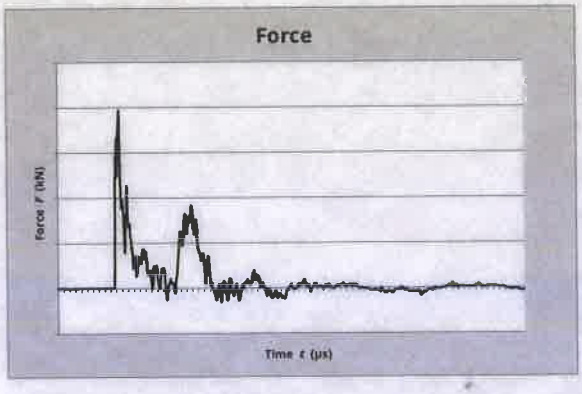
Diameter	d_r =	0.052 m
Length of the instrumented rod		0.558 m
Area	A =	11.61 cm^2
Modulus	E_a =	206843 MPa

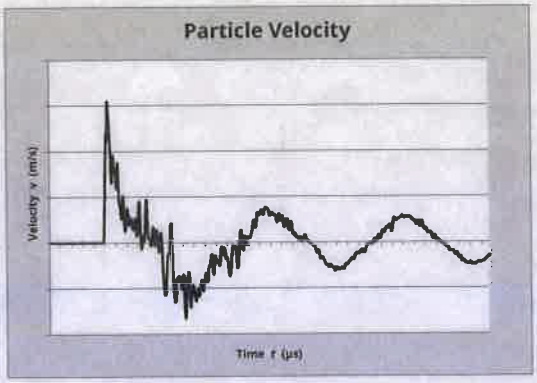


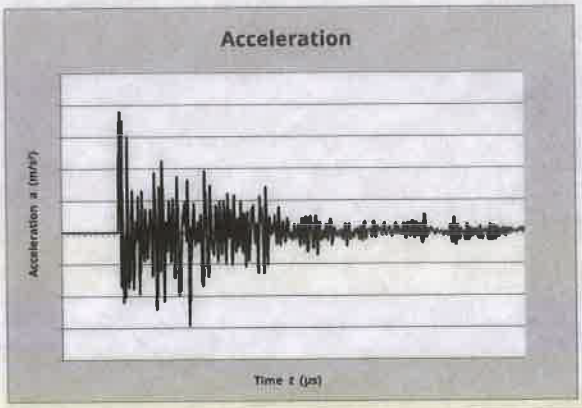
Key
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

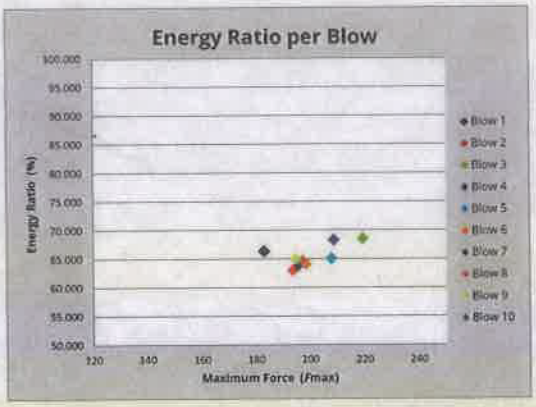
F Force
d_r Diameter of rod

Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011









Observations:
1.

E_{meas} = **0.308** kN-m

E_{theor} = **0.473** kN-m

Energy Ratio (E_r) = $\frac{E_{meas}}{E_{theor}}$ = 65.13%

Equipe SPT Analyzer Operators: KS

Prepared by:	[redacted]	Checked by	[redacted]	Date	09/12/2016

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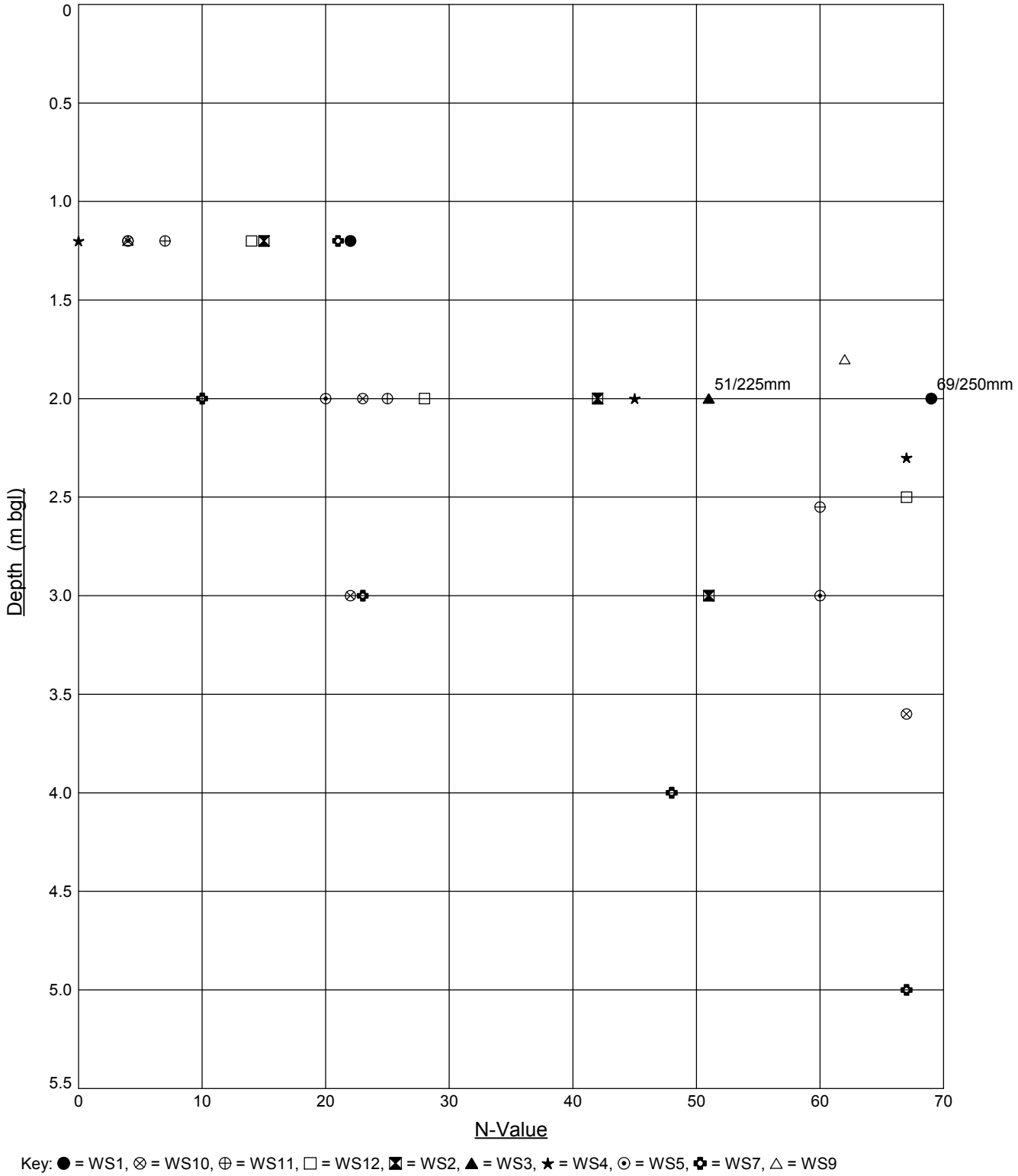
Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

STANDARD PENETRATION TEST (SPT N-Value) vs DEPTH

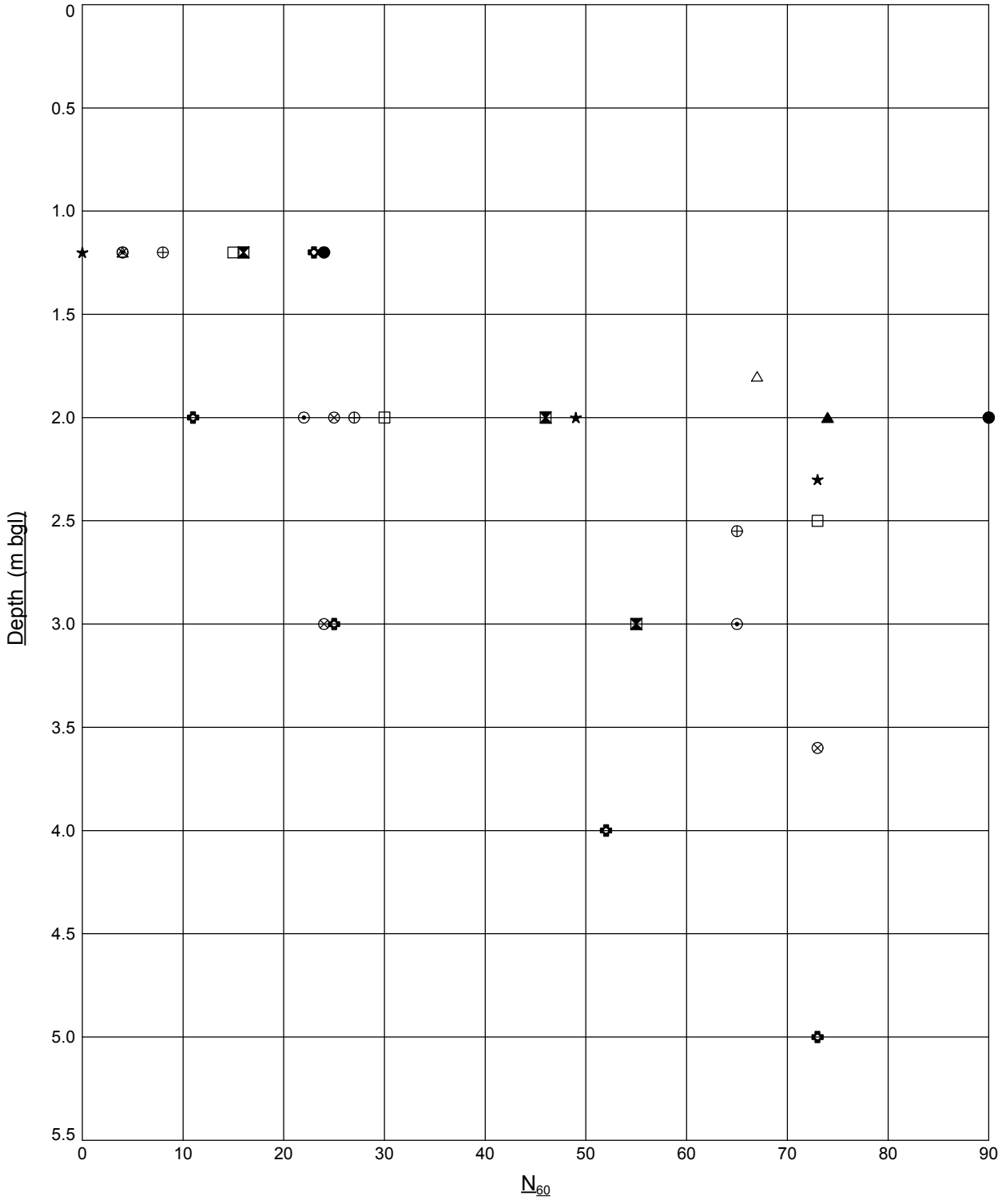


Key: ● = WS1, ⊗ = WS10, ⊕ = WS11, □ = WS12, ⧓ = WS2, ▲ = WS3, ★ = WS4, ⊙ = WS5, ✿ = WS7, △ = WS9

STRUCTURAL SOILS The Old School Stillhouse Lane Bedminster Bristol BS3 4EB	Contract **515 Stockwood Road, Brislington**	Date **31.08.17**	Compiled By [redacted]
	Client **515 Stockwood LLP**	Contract Ref: **732959**	AGS

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_018 PrjVersion: v8_06 - Core+Logs+Contam Scheduling - 002 | Graph G - PLOTS - SITE - GENERAL - A4P | 732959_515_STOCKWOOD_ROAD_BRISLINGTON.GPJ - v8_06. | 31/08/17 - 11:00 | JE4 |

STANDARD PENETRATION TEST (SPT N_{60}) vs DEPTH



Key: ● = WS1, ⊗ = WS10, ⊕ = WS11, □ = WS12, ⧓ = WS2, ▲ = WS3, ★ = WS4, ⊙ = WS5, ✿ = WS7, △ = WS9

STRUCTURAL SOILS The Old School Stillhouse Lane Bedminster Bristol BS3 4EB	Contract **515 Stockwood Road, Brislington**	Date **31.08.17**	Compiled By [redacted]
	Client **515 Stockwood LLP**	Contract Ref: **732959**	AGS

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_018 PrjVersion: v8_06 - Core+Logs+Contam Scheduling - 002 | Graph G - PLOTS - SITE - GENERAL - A4P | 732959_515_STOCKWOOD_ROAD_BRISLINGTON.GPJ - v8_06. | 31/08/17 - 11:01 | JE4 |

APPENDIX D - GEOENVIRONMENTAL TESTING

(i) Laboratory Test Results

(ii) Initial Waste Characterisation (Haswaste)

(iii) Clean Cover Calculation Sheet

(iv) Laboratory UKAS Accreditation Certificate

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 17/05426
Issue Number: 1 S1 **Date:** 30 August, 2017

Client: Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Jonathan Evans/Simon Pond
Project Name: 515 Stockwood Road
Project Ref: 732959
Order No: N/A
Date Samples Received: 09/08/17
Date Instructions Received: 09/08/17
Date Analysis Completed: 30/08/17

Prepared by:

[redacted]

Melanie Marshall
Laboratory Coordinator

Approved by:

[redacted]

Georgia King
Admins & Client Services Supervisor

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/19	17/05426/20	17/05426/21	17/05426/22	17/05426/24	17/05426/25	17/05426/26	17/05426/27	Units	Method ref
Client Sample No	1	2	3	4	1	2	3	4		
Client Sample ID	WS05	WS05	WS05	WS05	WS07	WS07	WS07	WS07		
Depth to Top	0.20	0.80	1.30	1.80	0.10	0.30	0.50	0.90		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	5	5	5	6	6A	6A	4A		
% Stones >10mm$_A$	-	-	-	<0.1	-	2.8	18.8	-	% w/w	A-T-044
pH$_D$ M#	-	-	-	5.99	-	8.16	8.04	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	-	-	-	0.03	-	0.02	<0.01	-	g/l	A-T-026s
Organic matter$_D$ M#	-	-	-	2.0	-	13.8	9.0	-	% w/w	A-T-032 OM
Arsenic$_D$ M#	-	-	-	<1	-	16	10	-	mg/kg	A-T-024s
Cadmium$_D$ M#	-	-	-	0.9	-	5.5	2.2	-	mg/kg	A-T-024s
Copper$_D$ M#	-	-	-	<1	-	80	37	-	mg/kg	A-T-024s
Chromium$_D$ M#	-	-	-	11	-	23	15	-	mg/kg	A-T-024s
Lead$_D$ M#	-	-	-	6	-	508	112	-	mg/kg	A-T-024s
Mercury$_D$	-	-	-	0.23	-	1.09	0.20	-	mg/kg	A-T-024s
Nickel$_D$ M#	-	-	-	16	-	31	17	-	mg/kg	A-T-024s
Selenium$_D$ M#	-	-	-	<1	-	2	<1	-	mg/kg	A-T-024s
Zinc$_D$ M#	-	-	-	12	-	675	179	-	mg/kg	A-T-024s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/19	17/05426/20	17/05426/21	17/05426/22	17/05426/24	17/05426/25	17/05426/26	17/05426/27	Units	Method ref
Client Sample No	1	2	3	4	1	2	3	4		
Client Sample ID	WS05	WS05	WS05	WS05	WS07	WS07	WS07	WS07		
Depth to Top	0.20	0.80	1.30	1.80	0.10	0.30	0.50	0.90		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	5	5	5	6	6A	6A	4A		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD	NAD	-	NAD	NAD	NAD	NAD		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A		

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/19	17/05426/20	17/05426/21	17/05426/22	17/05426/24	17/05426/25	17/05426/26	17/05426/27	Units	Method ref
Client Sample No	1	2	3	4	1	2	3	4		
Client Sample ID	WS05	WS05	WS05	WS05	WS07	WS07	WS07	WS07		
Depth to Top	0.20	0.80	1.30	1.80	0.10	0.30	0.50	0.90		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	4A	5	5	5	6	6A	6A	4A		
PAH 16										
Acenaphthene$_A^{M\#}$	-	-	-	<0.01	-	0.01	0.09	-	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	-	-	-	<0.01	-	<0.01	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	-	-	-	<0.02	-	0.05	0.25	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	-	-	<0.04	-	0.66	1.16	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	-	-	<0.04	-	0.69	1.00	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	-	-	<0.05	-	0.80	1.11	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	-	-	<0.05	-	0.50	0.53	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	-	-	<0.07	-	0.33	0.46	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	-	-	<0.06	-	0.69	1.16	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	-	-	<0.04	-	0.12	0.14	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	-	-	<0.08	-	0.85	2.64	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	-	-	<0.01	-	<0.01	0.07	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	-	-	<0.03	-	0.56	0.65	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	-	-	<0.03	-	<0.03	<0.03	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	-	-	<0.03	-	0.30	0.94	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	-	-	<0.07	-	0.79	2.20	-	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	-	-	-	<0.08	-	6.37	12.4	-	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A$	-	-	-	<10	-	<10	<10	-	mg/kg	A-T-007s
>C8-C10$_A$	-	-	-	<10	-	<10	<10	-	mg/kg	A-T-007s
>C10-C12$_A$	-	-	-	<10	-	<10	<10	-	mg/kg	A-T-007s
>C12-C16$_A$	-	-	-	<10	-	<10	<10	-	mg/kg	A-T-007s
>C16-C21$_A$	-	-	-	<10	-	<10	<10	-	mg/kg	A-T-007s
>C21-C40$_A$	-	-	-	<10	-	13	<10	-	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	-	-	-	N/A	-	N/A	N/A	-		A-T-007s
Total TPH Banded 1 with ID$_A$	-	-	-	<10	-	13	<10	-	mg/kg	A-T-007s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/31	17/05426/35	17/05426/36	17/05426/37					Units	Method ref
Client Sample No	1	1	2	3						
Client Sample ID	WS08	WS10	WS10	WS10						
Depth to Top	0.20	0.20	0.40	0.80						
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4A	4A	4A	5						
% Stones >10mm$_A$	18.0	-	-	<0.1					% w/w	A-T-044
pH$_D$ M#	9.63	-	-	7.47					pH	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	0.03	-	-	0.03					g/l	A-T-026s
Organic matter$_D$ M#	1.7	-	-	2.0					% w/w	A-T-032 OM
Arsenic$_D$ M#	11	-	-	<1					mg/kg	A-T-024s
Cadmium$_D$ M#	0.9	-	-	4.5					mg/kg	A-T-024s
Copper$_D$ M#	3	-	-	5					mg/kg	A-T-024s
Chromium$_D$ M#	6	-	-	16					mg/kg	A-T-024s
Lead$_D$ M#	20	-	-	56					mg/kg	A-T-024s
Mercury$_D$	1.15	-	-	<0.17					mg/kg	A-T-024s
Nickel$_D$ M#	4	-	-	13					mg/kg	A-T-024s
Selenium$_D$ M#	<1	-	-	2					mg/kg	A-T-024s
Zinc$_D$ M#	30	-	-	40					mg/kg	A-T-024s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/31	17/05426/35	17/05426/36	17/05426/37					Units	Method ref
Client Sample No	1	1	2	3						
Client Sample ID	WS08	WS10	WS10	WS10						
Depth to Top	0.20	0.20	0.40	0.80						
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4A	4A	4A	5						
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD	NAD	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	-						

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/31	17/05426/35	17/05426/36	17/05426/37					Units	Method ref
Client Sample No	1	1	2	3						
Client Sample ID	WS08	WS10	WS10	WS10						
Depth to Top	0.20	0.20	0.40	0.80						
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	4A	4A	4A	5						
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	-	-	<0.01					mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	0.04	-	-	<0.01					mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	-	-	<0.02					mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.08	-	-	<0.04					mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.24	-	-	<0.04					mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.25	-	-	<0.05					mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.40	-	-	<0.05					mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.09	-	-	<0.07					mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.24	-	-	<0.06					mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.09	-	-	<0.04					mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.27	-	-	<0.08					mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	-	<0.01					mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.32	-	-	<0.03					mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	-	-	<0.03					mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.04	-	-	<0.03					mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.35	-	-	<0.07					mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	2.43	-	-	<0.08					mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A$	<10	-	-	<10					mg/kg	A-T-007s
>C8-C10$_A$	<10	-	-	<10					mg/kg	A-T-007s
>C10-C12$_A$	<10	-	-	<10					mg/kg	A-T-007s
>C12-C16$_A$	<10	-	-	<10					mg/kg	A-T-007s
>C16-C21$_A$	30	-	-	<10					mg/kg	A-T-007s
>C21-C40$_A$	1070	-	-	<10					mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	Unknown profile	-	-	N/A						A-T-007s
Total TPH Banded 1 with ID$_A$	1100	-	-	<10					mg/kg	A-T-007s

REPORT NOTES

General:
This report shall not be reproduced, except in full, without written approval from Envirolab.
All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 17/05426
Issue Number: 1 S2 **Date:** 30 August, 2017

Client: Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Jonathan Evans/Simon Pond
Project Name: 515 Stockwood Road
Project Ref: 732959
Order No: N/A
Date Samples Received: 09/08/17
Date Instructions Received: 09/08/17
Date Analysis Completed: 30/08/17

Prepared by:

[redacted]
Melanie Marshall
Laboratory Coordinator

Approved by:

[redacted]
Admins & Client Services Supervisor

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/1	17/05426/2	17/05426/5	17/05426/6	17/05426/7	17/05426/11	17/05426/15	17/05426/16	Units	Method ref
Client Sample No	1	2	1	2	3	1	1	2		
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04		
Depth to Top	0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80		
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Solid	Soil - ES		
Sample Matrix Code	7	5	7	5	5A	4A	7	5A		
% Stones >10mm$_A$	-	<0.1	-	-	<0.1	-	-	7.3	% w/w	A-T-044
pH$_D$ M#	-	7.93	-	-	7.88	-	-	7.51	pH	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	-	<0.01	-	-	0.02	-	-	0.04	g/l	A-T-026s
Organic matter$_D$ M#	-	0.8	-	-	0.3	-	-	2.2	% w/w	A-T-032 OM
Arsenic$_D$ M#	-	<1	-	-	<1	-	-	<1	mg/kg	A-T-024s
Cadmium$_D$ M#	-	2.6	-	-	7.6	-	-	3.3	mg/kg	A-T-024s
Copper$_D$ M#	-	<1	-	-	<1	-	-	8	mg/kg	A-T-024s
Chromium$_D$ M#	-	20	-	-	23	-	-	15	mg/kg	A-T-024s
Lead$_D$ M#	-	9	-	-	19	-	-	25	mg/kg	A-T-024s
Mercury$_D$	-	<0.17	-	-	<0.17	-	-	<0.17	mg/kg	A-T-024s
Nickel$_D$ M#	-	20	-	-	19	-	-	12	mg/kg	A-T-024s
Selenium$_D$ M#	-	1	-	-	3	-	-	2	mg/kg	A-T-024s
Zinc$_D$ M#	-	33	-	-	23	-	-	40	mg/kg	A-T-024s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/1	17/05426/2	17/05426/5	17/05426/6	17/05426/7	17/05426/11	17/05426/15	17/05426/16	Units	Method ref
Client Sample No	1	2	1	2	3	1	1	2		
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04		
Depth to Top	0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80		
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Solid	Soil - ES		
Sample Matrix Code	7	5	7	5	5A	4A	7	5A		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD	NAD	NAD	-	NAD	NAD	NAD		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A		

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/1	17/05426/2	17/05426/5	17/05426/6	17/05426/7	17/05426/11	17/05426/15	17/05426/16	Units	Method ref
Client Sample No	1	2	1	2	3	1	1	2		
Client Sample ID	WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04		
Depth to Top	0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80		
Depth To Bottom										
Date Sampled	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	03-Aug-17	03-Aug-17		
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Solid	Soil - ES		
Sample Matrix Code	7	5	7	5	5A	4A	7	5A		
PAH 16										
Acenaphthene$_A^{M\#}$	-	<0.01	-	-	<0.01	-	-	0.02	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	-	-	<0.01	-	-	<0.01	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	-	-	<0.02	-	-	<0.02	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	-	-	<0.04	-	-	0.07	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	-	-	<0.04	-	-	0.09	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	-	-	<0.05	-	-	0.10	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	-	-	<0.05	-	-	0.06	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	-	-	<0.07	-	-	<0.07	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	-	-	<0.06	-	-	0.09	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	-	-	<0.04	-	-	<0.04	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	-	-	<0.08	-	-	0.17	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	-	<0.01	-	-	0.02	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	-	-	<0.03	-	-	0.07	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.03	-	-	<0.03	-	-	<0.03	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	-	-	<0.03	-	-	0.09	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	-	-	<0.07	-	-	0.10	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	-	<0.08	-	-	<0.08	-	-	0.88	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
>C8-C10$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
>C10-C12$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
>C12-C16$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
>C16-C21$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
>C21-C40$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	-	N/A	-	-	N/A	-	-	N/A		A-T-007s
Total TPH Banded 1 with ID$_A$	-	<10	-	-	<10	-	-	<10	mg/kg	A-T-007s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/32	17/05426/33	17/05426/40	17/05426/41	17/05426/45	17/05426/46	17/05426/47	17/05426/48	Units	Method ref
Client Sample No	1	2	1	2	1	2	3	4		
Client Sample ID	WS09	WS09	WS11	WS11	WS12	WS12	WS12	WS12		
Depth to Top	0.40	0.80	0.20	0.40	0.20	0.60	1.30	1.80		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5	4A	6A	4A	5	5	5A		
% Stones >10mm$_A$	-	<0.1	-	-	-	-	<0.1	<0.1	% w/w	A-T-044
pH$_D$ M#	-	6.76	-	-	-	-	7.34	-	pH	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	-	0.25	-	-	-	-	0.09	-	g/l	A-T-026s
Organic matter$_D$ M#	-	1.2	-	-	-	-	0.6	-	% w/w	A-T-032 OM
Arsenic$_D$ M#	-	2	-	-	-	-	1	-	mg/kg	A-T-024s
Cadmium$_D$ M#	-	3.5	-	-	-	-	2.7	-	mg/kg	A-T-024s
Copper$_D$ M#	-	17	-	-	-	-	<1	-	mg/kg	A-T-024s
Chromium$_D$ M#	-	19	-	-	-	-	21	-	mg/kg	A-T-024s
Lead$_D$ M#	-	14	-	-	-	-	8	-	mg/kg	A-T-024s
Mercury$_D$	-	<0.17	-	-	-	-	<0.17	-	mg/kg	A-T-024s
Nickel$_D$ M#	-	9	-	-	-	-	17	-	mg/kg	A-T-024s
Selenium$_D$ M#	-	3	-	-	-	-	3	-	mg/kg	A-T-024s
Zinc$_D$ M#	-	20	-	-	-	-	21	-	mg/kg	A-T-024s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/32	17/05426/33	17/05426/40	17/05426/41	17/05426/45	17/05426/46	17/05426/47	17/05426/48	Units	Method ref
Client Sample No	1	2	1	2	1	2	3	4		
Client Sample ID	WS09	WS09	WS11	WS11	WS12	WS12	WS12	WS12		
Depth to Top	0.40	0.80	0.20	0.40	0.20	0.60	1.30	1.80		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5	4A	6A	4A	5	5	5A		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	-	NAD	NAD	NAD	NAD	NAD	-		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	N/A	N/A	N/A	N/A	N/A	-		

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/32	17/05426/33	17/05426/40	17/05426/41	17/05426/45	17/05426/46	17/05426/47	17/05426/48	Units	Method ref
Client Sample No	1	2	1	2	1	2	3	4		
Client Sample ID	WS09	WS09	WS11	WS11	WS12	WS12	WS12	WS12		
Depth to Top	0.40	0.80	0.20	0.40	0.20	0.60	1.30	1.80		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5	4A	6A	4A	5	5	5A		
PAH 16										
Acenaphthene$_A^{M\#}$	-	<0.01	-	-	-	-	0.03	-	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	-	-	-	-	<0.01	-	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	-	-	-	-	<0.02	-	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	-	-	-	-	<0.04	-	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	-	-	-	-	<0.04	-	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	-	-	-	-	<0.05	-	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	-	-	-	-	<0.05	-	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	-	-	-	-	<0.07	-	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	-	-	-	-	<0.06	-	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	-	-	-	-	<0.04	-	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	-	-	-	-	<0.08	-	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	-	-	-	-	0.13	-	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	-	-	-	-	<0.03	-	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	-	<0.03	-	-	-	-	<0.03	-	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	-	-	-	-	0.20	-	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	-	-	-	-	<0.07	-	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	-	<0.08	-	-	-	-	0.34	-	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A$	-	<10	-	-	-	-	<10	-	mg/kg	A-T-007s
>C8-C10$_A$	-	<10	-	-	-	-	<10	-	mg/kg	A-T-007s
>C10-C12$_A$	-	<10	-	-	-	-	<10	-	mg/kg	A-T-007s
>C12-C16$_A$	-	<10	-	-	-	-	50	-	mg/kg	A-T-007s
>C16-C21$_A$	-	<10	-	-	-	-	55	-	mg/kg	A-T-007s
>C21-C40$_A$	-	<10	-	-	-	-	20	-	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	-	N/A	-	-	-	-	Possible heavily weathered and degraded diesel	-		A-T-007s
Total TPH Banded 1 with ID$_A$	-	<10	-	-	-	-	125	-	mg/kg	A-T-007s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/32	17/05426/33	17/05426/40	17/05426/41	17/05426/45	17/05426/46	17/05426/47	17/05426/48	Units	Method ref
Client Sample No	1	2	1	2	1	2	3	4		
Client Sample ID	WS09	WS09	WS11	WS11	WS12	WS12	WS12	WS12		
Depth to Top	0.40	0.80	0.20	0.40	0.20	0.60	1.30	1.80		
Depth To Bottom										
Date Sampled	03-Aug-17	03-Aug-17	03-Aug-17	03-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17	02-Aug-17		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5	4A	6A	4A	5	5	5A		
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
Ali >C6-C8$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
Ali >C8-C10$_A^{\#}$	-	-	-	-	-	-	0.04	<0.01	mg/kg	A-T-022s
Ali >C10-C12$_A^{\#}$	-	-	-	-	-	-	3.1	<0.1	mg/kg	A-T-023s
Ali >C12-C16$_A^{\#}$	-	-	-	-	-	-	27.8	<0.1	mg/kg	A-T-023s
Ali >C16-C21$_A^{\#}$	-	-	-	-	-	-	30.3	<0.1	mg/kg	A-T-023s
Ali >C21-C35$_A^{\#}$	-	-	-	-	-	-	6.0	<0.1	mg/kg	A-T-023s
Total Aliphatics$_A$	-	-	-	-	-	-	67.2	<0.1	mg/kg	A-T-023s
Aro >C5-C7$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
Aro >C7-C8$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
Aro >C8-C9$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
Aro >C9-C10$_A^{\#}$	-	-	-	-	-	-	0.04	<0.01	mg/kg	A-T-022s
Aro >C10-C12$_A^{\#}$	-	-	-	-	-	-	1.6	<0.1	mg/kg	A-T-023s
Aro >C12-C16$_A^{\#}$	-	-	-	-	-	-	14.1	<0.1	mg/kg	A-T-023s
Aro >C16-C21$_A^{\#}$	-	-	-	-	-	-	15.1	<0.1	mg/kg	A-T-023s
Aro >C21-C35$_A^{\#}$	-	-	-	-	-	-	2.6	<0.1	mg/kg	A-T-023s
Total Aromatics$_A$	-	-	-	-	-	-	33.4	<0.1	mg/kg	A-T-023s
TPH (Ali & Aro)$_A$	-	-	-	-	-	-	101	<0.1	mg/kg	A-T-023s
BTEX - Benzene$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Toluene$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s
MTBE$_A^{\#}$	-	-	-	-	-	-	<0.01	<0.01	mg/kg	A-T-022s

Envirolab Job Number: 17/05426

Client Project Name: 515 Stockwood Road

Client Project Ref: 732959

Lab Sample ID	17/05426/49								Units	Method ref
Client Sample No	2									
Client Sample ID	WS11 - Tile									
Depth to Top	0.40									
Depth To Bottom										
Date Sampled	03-Aug-17									
Sample Type	Solid - Fragment / Tile									
Sample Matrix Code	8									
Bulk Fibre ID (inc. matrix)										
Bulk Fibre Identification$_{A}^{\#}$	Amosite									A-T-045
Bulk Fibre Identification Matrix (visual)$_{A}$	Cement									A-T-045
Bulk Fibre Identification - Suitable for Water Absorption Test?$_{D}$	No									Gravimetry

REPORT NOTES

General:
This report shall not be reproduced, except in full, without written approval from Envirolab.
All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	17/05426
Issue Number:	1
Date:	30-Aug-17
Client:	Structural Soils Limited (Bristol) The Old School Stillhouse Lane Bedminster Bristol UK, BS3 4EB
Project Manager:	enviro@soils.co.uk/Jonathan Evans/Simon Pond
Project Name:	515 Stockwood Road
Project Ref:	732959
Order No:	N/A
Date Samples Received:	9-Aug-17
Date Instructions Received:	9-Aug-17
Date Analysis Completed:	30-Aug-17

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

Superscript "M" indicates method accredited to MCERTS.

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Prepared by:

[redacted]

Laboratory Coordinator

Approved by:

[redacted]

Georgia King
Admins & Client Services Supervisc

UKAS TESTING No. 1247

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	17/05426/16				
Client Sample Number				2		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS04				
Depth to Top				0.8				
Depth to Bottom								
Date Sampled				03/08/2017				
Sample Type				Soil - ES				
Sample Matrix Code				5A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	Y	Y	**7.51**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.28**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.03**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	Y	N	**6.3**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	Y	Y	**1.31**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**0.88**		100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**		500	-	-
Sum of 7 PCBs (mg/kg)$_D$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
				mg/l	**mg/kg**			
Arsenic	A-T-025	Y	N	0.003	**0.030**	0.5	2	25
Barium	A-T-025	Y	N	0.175	**1.750**	20	100	300
Cadmium	A-T-025	Y	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	Y	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	Y	N	0.001	**0.010**	2	50	100
Mercury	A-T-025	Y	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	Y	N	0.011	**0.110**	0.5	10	30
Nickel	A-T-025	Y	N	0.002	**0.020**	0.4	10	40
Lead	A-T-025	Y	N	0.001	**0.010**	0.5	10	50
Antimony	A-T-025	Y	N	0.001	**0.010**	0.06	0.7	5
Selenium	A-T-025	Y	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	Y	N	0.008	**0.080**	4	50	200
Chloride	A-T-026	Y	N	1	**14**	800	15000	25000
Fluoride	A-T-026	Y	N	0.3	**3.0**	10	150	500
Sulphate as SO_4	A-T-026	Y	N	22	**216**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	188	**1880**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	Y	7.2				
Conductivity (µS/cm)	A-T-037	N	N	375				
Mass Sample (kg)				0.231				
Dry Matter (%)	A-T-044	N	N	75.7				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	17/05426/25				
Client Sample Number				2		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS07				
Depth to Top				0.3				
Depth to Bottom								
Date Sampled				03/08/2017				
Sample Type				Soil - ES				
Sample Matrix Code				6A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	Y	Y	**8.16**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.54**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.05**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	Y	N	**11.9**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	Y	Y	**8**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**6.47**		100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**<10**		500	-	-
Sum of 7 PCBs (mg/kg)$_D$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	Y	N	0.004	**0.040**	0.5	2	25
Barium	A-T-025	Y	N	0.052	**0.520**	20	100	300
Cadmium	A-T-025	Y	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	Y	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	Y	N	0.005	**0.050**	2	50	100
Mercury	A-T-025	Y	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	Y	N	0.001	**0.010**	0.5	10	30
Nickel	A-T-025	Y	N	0.002	**0.020**	0.4	10	40
Lead	A-T-025	Y	N	0.015	**0.150**	0.5	10	50
Antimony	A-T-025	Y	N	0.002	**0.020**	0.06	0.7	5
Selenium	A-T-025	Y	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	Y	N	0.042	**0.420**	4	50	200
Chloride	A-T-026	Y	N	<1.00	**<10**	800	15000	25000
Fluoride	A-T-026	Y	N	0.8	**8.0**	10	150	500
Sulphate as SO_4	A-T-026	Y	N	<1.00	**<10**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	72	**720**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	Y	7.0				
Conductivity (µS/cm)	A-T-037	N	N	144				
Mass Sample (kg)				0.219				
Dry Matter (%)	A-T-044	N	N	79.8				

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Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	17/05426/47				
Client Sample Number				3		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				WS12				
Depth to Top				1.3				
Depth to Bottom								
Date Sampled				02/08/2017				
Sample Type				Soil - ES				
Sample Matrix Code				5				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	Y	Y	**7.34**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.05**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.01**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	Y	N	**5.7**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	Y	Y	**0.37**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**0.34**		100	-	-
Mineral Oil (mg/kg)$_A$	A-T-007	N	N	**73**		500	-	-
Sum of 7 PCBs (mg/kg)$_D$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	Y	N	0.003	**0.030**	0.5	2	25
Barium	A-T-025	Y	N	0.124	**1.240**	20	100	300
Cadmium	A-T-025	Y	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	Y	N	0.004	**0.040**	0.5	10	70
Copper	A-T-025	Y	N	0.002	**0.020**	2	50	100
Mercury	A-T-025	Y	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	Y	N	<0.001	**<0.01**	0.5	10	30
Nickel	A-T-025	Y	N	0.003	**0.030**	0.4	10	40
Lead	A-T-025	Y	N	0.009	**0.090**	0.5	10	50
Antimony	A-T-025	Y	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	Y	N	0.002	**0.020**	0.1	0.5	7
Zinc	A-T-025	Y	N	0.051	**0.510**	4	50	200
Chloride	A-T-026	Y	N	10	**97**	800	15000	25000
Fluoride	A-T-026	Y	N	0.3	**3.0**	10	150	500
Sulphate as SO_4	A-T-026	Y	N	38	**383**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	32	**320**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	Y	6.6				
Conductivity (µS/cm)	A-T-037	N	N	63				
Mass Sample (kg)				0.228				
Dry Matter (%)	A-T-044	N	N	76.6				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 17/05552
Issue Number: 1 **Date:** 29 August, 2017

Client: Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Simon Pond
Project Name: Stockwood Road, Brislington
Project Ref: 732959
Order No: N/A
Date Samples Received: 14/08/17
Date Instructions Received: 15/08/17
Date Analysis Completed: 29/08/17

Prepared by:

[redacted]
Melanie Marshall
Laboratory Coordinator

Approved by:

[redacted]
Iain Haslock
Analytical Consultant

UKAS TESTING
1247

Envirolab Job Number: 17/05552

Client Project Name: Stockwood Road, Brislington

Client Project Ref: 732959

Lab Sample ID	17/05552/1								Units	Method ref
Client Sample No										
Client Sample ID	WS12									
Depth to Top	2.37									
Depth To Bottom										
Date Sampled	10-Aug-17									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
pH (w)$_A^\#$	7.44								pH	A-T-031w
Hardness Total$_A^\#$	163								mg/l Ca CO3	A-T-049w
Sulphate (w)$_A^\#$	20								mg/l	A-T-026w
DOC (w)$_A^\#$	25.8								mg/l	A-T-032w
Arsenic (dissolved)$_A^\#$	2								µg/l	A-T-025w
Cadmium (dissolved)$_A^\#$	<0.2								µg/l	A-T-025w
Calcium (dissolved)$_A^\#$	49								mg/l	A-T-049w
Copper (dissolved)$_A^\#$	7								µg/l	A-T-025w
Chromium (dissolved)$_A^\#$	<1								µg/l	A-T-025w
Lead (dissolved)$_A^\#$	<1								µg/l	A-T-025w
Mercury (dissolved)$_A^\#$	<0.1								µg/l	A-T-025w
Nickel (dissolved)$_A^\#$	8								µg/l	A-T-025w
Selenium (dissolved)$_A^\#$	10								µg/l	A-T-025w
Zinc (dissolved)$_A^\#$	15								µg/l	A-T-025w

Envirolab Job Number: 17/05552

Client Project Name: Stockwood Road, Brislington

Client Project Ref: 732959

Lab Sample ID	17/05552/1								Units	Method ref
Client Sample No										
Client Sample ID	WS12									
Depth to Top	2.37									
Depth To Bottom										
Date Sampled	10-Aug-17									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
PAH 16MS (w)										
Acenaphthene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Acenaphthylene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Anthracene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Benzo(a)anthracene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Benzo(a)pyrene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Benzo(b)fluoranthene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Benzo(ghi)perylene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Benzo(k)fluoranthene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Chrysene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Dibenzo(ah)anthracene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Fluoranthene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Fluorene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Indeno(123-cd)pyrene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Naphthalene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Phenanthrene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
Pyrene $(w)_A^{\#}$	<0.01								µg/l	A-T-019w
PAH (total 16) $(w)_A^{\#}$	<0.01								µg/l	A-T-019w

Envirolab Job Number: 17/05552

Client Project Name: Stockwood Road, Brislington

Client Project Ref: 732959

Lab Sample ID	17/05552/1								Units	Method ref
Client Sample No										
Client Sample ID	WS12									
Depth to Top	2.37									
Depth To Bottom										
Date Sampled	10-Aug-17									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
TPH CWG										
Ali >C5-C6 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Ali >C10-C12 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Ali >C12-C16 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Ali >C16-C21 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Ali >C21-C35 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Total Aliphatics $(w)_A$	<5								µg/l	A-T-022+23w
Aro >C5-C7 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Aro >C8-C9 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Aro >C9-C10 $(w)_A^{\#}$	<1								µg/l	A-T-022w
Aro >C10-C12 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Aro >C12-C16 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Aro >C16-C21 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Aro >C21-C35 $(w)_A^{\#}$	<5								µg/l	A-T-023w
Total Aromatics $(w)_A$	<5								µg/l	A-T-022+23w
TPH (Ali & Aro) $(w)_A$	<5								µg/l	A-T-022+23w
BTEX - Benzene $(w)_A^{\#}$	<1								µg/l	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	<1								µg/l	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	<1								µg/l	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	<1								µg/l	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	<1								µg/l	A-T-022w
MTBE $(w)_A^{\#}$	<1								µg/l	A-T-022w

REPORT NOTES

General:
This report shall not be reproduced, except in full, without written approval from Envirolab.
All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Haswaste, developed by Dr. Iain Haslock.

515 Stockwood Road
732959

TP/WS/BH			WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04	WS05
Depth (m)			0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80	0.20
Envirolab reference											
% Moisture		%									
pH (soil)				7.93			7.88			7.51	
pH (leachate)											
Arsenic		mg/kg		1			1			1	
Cadmium	updated v5.4ei	mg/kg		2.6			7.6			3.3	
Copper		mg/kg		1			1			8	
CrVI or Chromium		mg/kg		20			23			15	
Lead		mg/kg		9			19			25	
Mercury		mg/kg		0.17			0.17			0.17	
Nickel		mg/kg		20			19			12	
Selenium		mg/kg		1			3			2	
Zinc	updated v5.4ei	mg/kg		33			23			40	
Barium		mg/kg									
Beryllium		mg/kg									
Vanadium		mg/kg									
Cobalt	updated v5.4ei	mg/kg									
Manganese	updated v5.4ei	mg/kg									
Molybdenum		mg/kg									
Antimony		mg/kg									
Aluminium		mg/kg									
Bismuth		mg/kg									
CrIII		mg/kg									
Iron	updated v5.4ei	mg/kg									
Strontium		mg/kg									
Tellurium		mg/kg									
Thallium		mg/kg									
Titanium		mg/kg									
Tungsten		mg/kg									
Ammoniacal N		mg/kg									
ws Boron		mg/kg									
PAH (Input Total PAH **OR** individual PAH results)											
Acenaphthene		mg/kg		0.01			0.01			0.02	
Acenaphthylene		mg/kg		0.01			0.01			0.01	
Anthracene		mg/kg		0.02			0.02			0.02	
Benzo(a)anthracene		mg/kg		0.04			0.04			0.07	
Benzo(a)pyrene		mg/kg		0.04			0.04			0.09	
Benzo(b)fluoranthene		mg/kg		0.05			0.05			0.10	
Benzo(ghi)perylene		mg/kg		0.05			0.05			0.06	
Benzo(k)fluoranthene		mg/kg		0.07			0.07			0.07	
Chrysene		mg/kg		0.06			0.06			0.09	
Dibenzo(ah)anthracene		mg/kg		0.04			0.04			0.04	
Fluoranthene		mg/kg		0.08			0.08			0.17	
Fluorene		mg/kg		0.01			0.01			0.02	
Indeno(123cd)pyrene		mg/kg		0.03			0.03			0.07	
Naphthalene		mg/kg		0.03			0.03			0.03	
Phenanthrene		mg/kg		0.03			0.03			0.09	
Pyrene		mg/kg		0.07			0.07			0.10	
Coronene		mg/kg									
Total PAHs (16 or 17)		mg/kg									
TPH											
Petrol		mg/kg									
Diesel		mg/kg									
Lube Oil		mg/kg									
Crude Oil		mg/kg									
White Spirit / Kerosene		mg/kg									
Creosote		mg/kg									
Unknown TPH with ID		mg/kg		10.0			10.0			10.0	
Unknown TPHCWG		mg/kg									
Total Sulphide		mg/kg									
Complex Cyanide		mg/kg									
Free (or Total) Cyanide		mg/kg									
Thiocyanate		mg/kg									
Elemental/Free Sulphur		mg/kg									
Phenols Input Total Phenols HPLC **OR** individual Phenol results.											
Phenol		mg/kg									
Cresols		mg/kg									
Xylenols		mg/kg									
Resourcinol		mg/kg									
Phenols Total by HPLC		mg/kg									
BTEX Input Total BTEX **OR** individual BTEX results.											
Benzene		mg/kg									
Toluene		mg/kg									
Ethylbenzene		mg/kg									
Xylenes		mg/kg									
Total BTEX		mg/kg									
PCBs (POPs)											
PCBs Total (eg EC7/WHO12)		mg/kg									
PBBs (POPs)											
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)		mg/kg									

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TP/WS/BH		WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04	WS05
Depth (m)		0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80	0.20
Envirolab reference										
POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.										
2,3,7,8-TeCDD	mg/kg									
1,2,3,7,8-PeCDD	mg/kg									
1,2,3,4,7,8-HxCDD	mg/kg									
1,2,3,6,7,8-HxCDD	mg/kg									
1,2,3,7,8,9-HxCDD	mg/kg									
1,2,3,4,6,7,8-HpCDD	mg/kg									
OCDD	mg/kg									
2,3,7,8-TeCDF	mg/kg									
1,2,3,7,8-PeCDF	mg/kg									
2,3,4,7,8-PeCDF	mg/kg									
1,2,3,4,7,8-HxCDF	mg/kg									
1,2,3,6,7,8-HxCDF	mg/kg									
2,3,4,6,7,8-HxCDF	mg/kg									
1,2,3,7,8,9-HxCDF	mg/kg									
1,2,3,4,6,7,8-HpCDF	mg/kg									
1,2,3,4,7,8,9-HpCDF	mg/kg									
OCDF	mg/kg									
Total Dioxins and Furans	mg/kg									
Some Pesticides (POPs unless otherwise stated)										
Aldrin	mg/kg									
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*	mg/kg									
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*	mg/kg									
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*	mg/kg									
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*	mg/kg									
Dieldrin	updated v5.4ei mg/kg									
Endrin	mg/kg									
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*	updated v5.4ei mg/kg									
Heptachlor	mg/kg									
Hexachlorobenzene	mg/kg									
o,p'-DDT *(leave empty if total DDT results used)*	mg/kg									
p,p'-DDT ***OR*** *Total DDT*	updated v5.4ei mg/kg									
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*	mg/kg									
Chlordecone (kepone)	mg/kg									
Pentachlorobenzene	mg/kg									
Mirex	mg/kg									
Toxaphene (camphechlor)	mg/kg									
Tin										
Tin *(leave empty if Organotin and Tin excl Organotin results used)*	mg/kg									
Organotin										
Dibutyltin; DiBT	mg/kg									
Tributyltin; TriBT	mg/kg									
Triphenyltin; TriPT	mg/kg									
Tetrabutyltin; TeBT	mg/kg									
Tin excluding Organotin										
Tin excl Organotin	mg/kg									

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TP/WS/BH	WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04	WS05
Depth (m)	0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80	0.20
Envirolab reference									
Asbestos in Soil	Thresholds								
Asbestos detected in Soil (enter Y or N)	Y	N	N	N	N		N	N	N	N
		Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7							
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%							
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.							
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y								

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05. Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.
All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00000	0.00397	0.00000	0.00000	0.00455	0.00000	0.00000	0.00301	0.00000
Irritant HP4	≥10%	<1%	0.00000	0.00025	0.00000	0.00000	0.00025	0.00000	0.00000	0.00104	0.00000
Irritant HP4	≥20%	<1%	0.00000	0.00417	0.00000	0.00000	0.00397	0.00000	0.00000	0.00335	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00404	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Specifc Target Organ Toxicity HP5	≥10%		0.00000	0.00100	0.00000	0.00000	0.00190	0.00000	0.00000	0.00250	0.00000
Aspiration Toxicity HP5	≥10%		0.00000	0.00100	0.00000	0.00000	0.00100	0.00000	0.00000	0.00100	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00015	0.00000	0.00000	0.00015	0.00000	0.00000	0.00015	0.00000
Acute Toxicity HP6	≥5%	<0.1%	0.00000	0.00398	0.00000	0.00000	0.00484	0.00000	0.00000	0.00316	0.00000
Acute Toxicity HP6	≥25%	<1%	0.00000	0.00533	0.00000	0.00000	0.00663	0.00000	0.00000	0.00619	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00002	0.00000	0.00000	0.00002	0.00000	0.00000	0.00002	0.00000
Acute Toxicity HP6	≥2.5%	<0.1%	0.00000	0.00384	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00000	0.00026	0.00000	0.00000	0.00076	0.00000	0.00000	0.00033	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00000	0.00412	0.00000	0.00000	0.00519	0.00000	0.00000	0.00323	0.00000
Acute Toxicity HP6	≥3.5%	<0.1%	0.00000	0.00014	0.00000	0.00000	0.00042	0.00000	0.00000	0.00028	0.00000
Acute Toxicity HP6	≥22.5%	<1%	0.00000	0.00505	0.00000	0.00000	0.00585	0.00000	0.00000	0.00583	0.00000
Carcinogenic HP7	≥0.1%		0.00000	0.00404	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00000
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		0.00	10.00	0.00	0.00	10.00	0.00	0.00	10.00	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	0.40000	#DIV/0!	#DIV/0!	0.40000	#DIV/0!	#DIV/0!	0.90000	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		0.00	7.93	0.00	0.00	7.88	0.00	0.00	7.51	0.00
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		0.00	7.93	0.00	0.00	7.88	0.00	0.00	7.51	0.00
Toxic for Reproduction HP10	≥0.3%		0.00000	0.00404	0.00000	0.00000	0.00384	0.00000	0.00000	0.00250	0.00000
Toxic for Reproduction HP10	≥3%		0.00000	0.00384	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Mutagenic HP11	≥0.1%		0.00000	0.00384	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		0.00	10.00	0.00	0.00	10.00	0.00	0.00	10.00	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	0.40000	#DIV/0!	#DIV/0!	0.40000	#DIV/0!	#DIV/0!	0.90000	#DIV/0!
Mutagenic HP11	≥1%		0.00000	0.00404	0.00000	0.00000	0.00384	0.00000	0.00000	0.00242	0.00000
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00000	0.00404	0.00000	0.00000	0.00442	0.00000	0.00000	0.00288	0.00000
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00000	0.05490	0.00000	0.00000	0.05852	0.00000	0.00000	0.05863	0.00000
Ecotoxic HP14	≥25%	<0.1%	0.00000	0.01363	0.00000	0.00000	0.01453	0.00000	0.00000	0.01457	0.00000
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00000	0.01463	0.00000	0.00000	0.01553	0.00000	0.00000	0.01556	0.00000

Table 3.1 of the CLP, CL Inventory, ATPs, IARC, Concawe, MSDSs, REACH + Pesticide Properties databases. Worst case REACH + MSDS's used for "*" STOT + Acute Toxicity.

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TP/WS/BH	WS01	WS01	WS02	WS02	WS02	WS03	WS04	WS04	WS05
Depth (m)	0.20	0.60	0.20	0.60	1.00	0.20	0.20	0.80	0.20
Envirolab reference									
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used), Sn, TriPT) ≥0.0025%	0.000000	0.000004	0.000000	0.000000	0.000004	0.000000	0.000000	0.000007	0.000000
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH, DiBT, TriBT) ≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistent Organic Pollutant (PCB, PBB or POP Pesticides) >0.005%	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistent Organic Pollutant (Total Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistent Organic Pollutant (Individual Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

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TP/WS/BH			WS05	WS05	WS05	WS07	WS07	WS07	WS07	WS08	WS09
Depth (m)			0.80	1.30	1.80	0.10	0.30	0.50	0.90	0.20	0.40
Envirolab reference											
% Moisture		%									
pH (soil)					5.99		8.16	8.04		9.63	
pH (leachate)											
Arsenic		mg/kg			1		16	10		11	
Cadmium	updated v5.4ei	mg/kg			0.9		5.5	2.2		0.9	
Copper		mg/kg			1		80	37		3	
CrVI or Chromium		mg/kg			11		23	15		6	
Lead		mg/kg			6		508	112		20	
Mercury		mg/kg			0.23		1.09	0.20		1.15	
Nickel		mg/kg			16		31	17		4	
Selenium		mg/kg			1		2	1		1	
Zinc	updated v5.4ei	mg/kg			12		675	179		30	
Barium		mg/kg									
Beryllium		mg/kg									
Vanadium		mg/kg									
Cobalt	updated v5.4ei	mg/kg									
Manganese	updated v5.4ei	mg/kg									
Molybdenum		mg/kg									
Antimony		mg/kg									
Aluminium		mg/kg									
Bismuth		mg/kg									
CrIII		mg/kg									
Iron	updated v5.4ei	mg/kg									
Strontium		mg/kg									
Tellurium		mg/kg									
Thallium		mg/kg									
Titanium		mg/kg									
Tungsten		mg/kg									
Ammoniacal N		mg/kg									
ws Boron		mg/kg									
PAH (Input Total PAH **OR** individual PAH results)											
Acenaphthene		mg/kg			0.01		0.01	0.09		0.01	
Acenaphthylene		mg/kg			0.01		0.01	0.01		0.04	
Anthracene		mg/kg			0.02		0.05	0.25		0.02	
Benzo(a)anthracene		mg/kg			0.04		0.66	1.16		0.08	
Benzo(a)pyrene		mg/kg			0.04		0.69	1.00		0.24	
Benzo(b)fluoranthene		mg/kg			0.05		0.80	1.11		0.25	
Benzo(ghi)perylene		mg/kg			0.05		0.50	0.53		0.40	
Benzo(k)fluoranthene		mg/kg			0.07		0.33	0.46		0.09	
Chrysene		mg/kg			0.06		0.69	1.16		0.24	
Dibenzo(ah)anthracene		mg/kg			0.04		0.12	0.14		0.09	
Fluoranthene		mg/kg			0.08		0.85	2.64		0.27	
Fluorene		mg/kg			0.01		0.01	0.07		0.01	
Indeno(123cd)pyrene		mg/kg			0.03		0.56	0.65		0.32	
Naphthalene		mg/kg			0.03		0.03	0.03		0.03	
Phenanthrene		mg/kg			0.03		0.30	0.94		0.04	
Pyrene		mg/kg			0.07		0.79	2.20		0.35	
Coronene		mg/kg									
Total PAHs (16 or 17)		mg/kg									
TPH											
Petrol		mg/kg									
Diesel		mg/kg									
Lube Oil		mg/kg									
Crude Oil		mg/kg									
White Spirit / Kerosene		mg/kg									
Creosote		mg/kg									
Unknown TPH with ID		mg/kg			10.0		13.0	10.0		1,100.0	
Unknown TPHCWG		mg/kg									
Total Sulphide		mg/kg									
Complex Cyanide		mg/kg									
Free (or Total) Cyanide		mg/kg									
Thiocyanate		mg/kg									
Elemental/Free Sulphur		mg/kg									
Phenols Input Total Phenols HPLC **OR** individual Phenol results.											
Phenol		mg/kg									
Cresols		mg/kg									
Xylenols		mg/kg									
Resourcinol		mg/kg									
Phenols Total by HPLC		mg/kg									
BTEX Input Total BTEX **OR** individual BTEX results.											
Benzene		mg/kg									
Toluene		mg/kg									
Ethylbenzene		mg/kg									
Xylenes		mg/kg									
Total BTEX		mg/kg									
PCBs (POPs)											
PCBs Total (eg EC7/WHO12)		mg/kg									
PBBs (POPs)											
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)		mg/kg									

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TP/WS/BH	WS05	WS05	WS05	WS07	WS07	WS07	WS07	WS08	WS09
Depth (m)	0.80	1.30	1.80	0.10	0.30	0.50	0.90	0.20	0.40
Envirolab reference									

POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.

2,3,7,8-TeCDD		mg/kg								
1,2,3,7,8-PeCDD		mg/kg								
1,2,3,4,7,8-HxCDD		mg/kg								
1,2,3,6,7,8-HxCDD		mg/kg								
1,2,3,7,8,9-HxCDD		mg/kg								
1,2,3,4,6,7,8-HpCDD		mg/kg								
OCDD		mg/kg								
2,3,7,8-TeCDF		mg/kg								
1,2,3,7,8-PeCDF		mg/kg								
2,3,4,7,8-PeCDF		mg/kg								
1,2,3,4,7,8-HxCDF		mg/kg								
1,2,3,6,7,8-HxCDF		mg/kg								
2,3,4,6,7,8-HxCDF		mg/kg								
1,2,3,7,8,9-HxCDF		mg/kg								
1,2,3,4,6,7,8-HpCDF		mg/kg								
1,2,3,4,7,8,9-HpCDF		mg/kg								
OCDF		mg/kg								
Total Dioxins and Furans		mg/kg								

Some Pesticides (POPs unless otherwise stated)

Aldrin		mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*		mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*		mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*		mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*		mg/kg								
Dieldrin	updated v5.4ei	mg/kg								
Endrin		mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*	updated v5.4ei	mg/kg								
Heptachlor		mg/kg								
Hexachlorobenzene		mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*		mg/kg								
p,p'-DDT ***OR*** *Total DDT*	updated v5.4ei	mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*		mg/kg								
Chlordecone (kepone)		mg/kg								
Pentachlorobenzene		mg/kg								
Mirex		mg/kg								
Toxaphene (camphechlor)		mg/kg								

Tin

Tin *(leave empty if Organotin and Tin excl Organotin results used)*		mg/kg								

Organotin

Dibutyltin; DiBT		mg/kg								
Tributyltin; TriBT		mg/kg								
Triphenyltin; TriPT		mg/kg								
Tetrabutyltin; TeBT		mg/kg								

Tin excluding Organotin

Tin excl Organotin		mg/kg								

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515 Stockwood Road
732959

TP/WS/BH	WS05	WS05	WS05	WS07	WS07	WS07	WS07	WS08	WS09
Depth (m)	0.80	1.30	1.80	0.10	0.30	0.50	0.90	0.20	0.40
Envirolab reference									

Asbestos in Soil	Thresholds									
Asbestos detected in Soil (enter Y or N)	Y	N	N		N	N	N	N	N	N
		Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7								
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%								
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.								
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y									

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05. Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.
All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00000	0.00000	0.00224	0.00000	0.00653	0.00420	0.00000	0.00260	0.00000
Irritant HP4	≥10%	<1%	0.00000	0.00000	0.00025	0.00000	0.01115	0.00550	0.00000	0.00179	0.00000
Irritant HP4	≥20%	<1%	0.00000	0.00000	0.00336	0.00000	0.01542	0.00796	0.00000	0.00119	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00000	0.00000	0.00000	0.00000	0.00003	0.00009	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00323	0.00000	0.00626	0.00343	0.00000	0.00115	0.00000
Specifc Target Organ Toxicity HP5	≥10%		0.00000	0.00000	0.00100	0.00000	0.05080	0.01120	0.00000	0.11000	0.00000
Aspiration Toxicity HP5	≥10%		0.00000	0.00000	0.00100	0.00000	0.00130	0.00100	0.00000	0.11000	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00000	0.00016	0.00000	0.00222	0.00134	0.00000	0.00157	0.00000
Acute Toxicity HP6	≥5%	<0.1%	0.00000	0.00000	0.00225	0.00000	0.00470	0.00302	0.00000	0.00129	0.00000
Acute Toxicity HP6	≥25%	<1%	0.00000	0.00000	0.00405	0.00000	0.06677	0.01940	0.00000	0.00328	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00000	0.00002	0.00000	0.00011	0.00002	0.00000	0.00012	0.00000
Acute Toxicity HP6	≥2.5%	<0.1%	0.00000	0.00000	0.00211	0.00000	0.00442	0.00288	0.00000	0.00115	0.00000
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00000	0.00000	0.00009	0.00000	0.00055	0.00022	0.00000	0.00009	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00000	0.00000	0.00223	0.00000	0.00508	0.00312	0.00000	0.00136	0.00000
Acute Toxicity HP6	≥3.5%	<0.1%	0.00000	0.00000	0.00014	0.00000	0.00028	0.00014	0.00000	0.00014	0.00000
Acute Toxicity HP6	≥22.5%	<1%	0.00000	0.00000	0.00395	0.00000	0.06610	0.01882	0.00000	0.00315	0.00000
Carcinogenic HP7	≥0.1%		0.00000	0.00000	0.00323	0.00000	0.05080	0.01120	0.00000	0.00200	0.00000
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00000	0.00000	0.00000	0.00000	0.00006	0.00007	0.00000	0.00003	0.00000
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	10.00	0.00	13.00	10.00	0.00	**1100.00**	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	0.40000	#DIV/0!	5.30769	10.00000	#DIV/0!	**0.02182**	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		0.00	0.00	5.99	0.00	8.16	8.04	0.00	9.63	0.00
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		0.00	0.00	5.99	0.00	8.16	8.04	0.00	9.63	0.00
Toxic for Reproduction HP10	≥0.3%		0.00000	0.00000	0.00323	0.00000	0.05080	0.01120	0.00000	0.00200	0.00000
Toxic for Reproduction HP10	≥3%		0.00000	0.00000	0.00211	0.00000	0.00442	0.00288	0.00000	0.11000	0.00000
Mutagenic HP11	≥0.1%		0.00000	0.00000	0.00211	0.00000	0.00442	0.00288	0.00000	0.00115	0.00000
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	10.00	0.00	13.00	10.00	0.00	**1100.00**	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	0.40000	#DIV/0!	5.30769	10.00000	#DIV/0!	**0.02182**	#DIV/0!
Mutagenic HP11	≥1%		0.00000	0.00000	0.00323	0.00000	0.00626	0.00343	0.00000	0.00081	0.00000
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00000	0.00000	0.00323	0.00000	0.00626	0.00343	0.00000	0.00115	0.00000
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00000	0.00000	0.03240	0.00000	0.63452	0.18782	0.00000	0.08422	0.00000
Ecotoxic HP14	≥25%	<0.1%	0.00000	0.00000	0.00800	0.00000	0.15853	0.04695	0.00000	0.01006	0.00000
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00000	0.00000	0.00900	0.00000	0.15980	0.04786	0.00000	0.12006	0.00000

Table 3.1 of the CLP, CL Inventory, ATPs, IARC, Concawe, MSDSs, REACH + Pesticide Properties databases. Worst case REACH + MSDS's used for "*" STOT + Acute Toxicity.

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Haswaste, developed by Dr. Iain Haslock.

515 Stockwood Road
732959

TP/WS/BH	WS05	WS05	WS05	WS07	WS07	WS07	WS07	WS08	WS09
Depth (m)	0.80	1.30	1.80	0.10	0.30	0.50	0.90	0.20	0.40
Envirolab reference									
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used), Sn, TriPT) ≥0.0025%	0.000000	0.000000	0.000004	0.000000	0.000066	0.000116	0.000000	0.000009	0.000000
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH, DiBT, TriBT) ≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistent Organic Pollutant (PCB, PBB or POP Pesticides) >0.005%	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistent Organic Pollutant (Total Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistent Organic Pollutant (Individual Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

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TP/WS/BH			WS09	WS10	WS10	WS10	WS11	WS11	WS12	WS12	WS12
Depth (m)			0.80	0.20	0.40	0.80	0.20	0.40	0.20	0.60	1.30
Envirolab reference											
% Moisture		%									
pH (soil)			6.76			7.47					7.34
pH (leachate)											
Arsenic		mg/kg	2			1					1
Cadmium	updated v5.4ei	mg/kg	3.5			4.5					2.7
Copper		mg/kg	17			5					1
CrVI or Chromium		mg/kg	19			16					21
Lead		mg/kg	14			56					8
Mercury		mg/kg	0.17			0.17					0.17
Nickel		mg/kg	9			13					17
Selenium		mg/kg	3			2					3
Zinc	updated v5.4ei	mg/kg	20			40					21
Barium		mg/kg									
Beryllium		mg/kg									
Vanadium		mg/kg									
Cobalt	updated v5.4ei	mg/kg									
Manganese	updated v5.4ei	mg/kg									
Molybdenum		mg/kg									
Antimony		mg/kg									
Aluminium		mg/kg									
Bismuth		mg/kg									
CrIII		mg/kg									
Iron	updated v5.4ei	mg/kg									
Strontium		mg/kg									
Tellurium		mg/kg									
Thallium		mg/kg									
Titanium		mg/kg									
Tungsten		mg/kg									
Ammoniacal N		mg/kg									
ws Boron		mg/kg									
PAH (Input Total PAH **OR** individual PAH results)											
Acenaphthene		mg/kg	0.01			0.01					0.03
Acenaphthylene		mg/kg	0.01			0.01					0.01
Anthracene		mg/kg	0.02			0.02					0.02
Benzo(a)anthracene		mg/kg	0.04			0.04					0.04
Benzo(a)pyrene		mg/kg	0.04			0.04					0.04
Benzo(b)fluoranthene		mg/kg	0.05			0.05					0.05
Benzo(ghi)perylene		mg/kg	0.05			0.05					0.05
Benzo(k)fluoranthene		mg/kg	0.07			0.07					0.07
Chrysene		mg/kg	0.06			0.06					0.06
Dibenzo(ah)anthracene		mg/kg	0.04			0.04					0.04
Fluoranthene		mg/kg	0.08			0.08					0.08
Fluorene		mg/kg	0.01			0.01					0.13
Indeno(123cd)pyrene		mg/kg	0.03			0.03					0.03
Naphthalene		mg/kg	0.03			0.03					0.03
Phenanthrene		mg/kg	0.03			0.03					0.20
Pyrene		mg/kg	0.07			0.07					0.07
Coronene		mg/kg									
Total PAHs (16 or 17)		mg/kg									
TPH											
Petrol		mg/kg									
Diesel		mg/kg									125.0
Lube Oil		mg/kg									
Crude Oil		mg/kg									
White Spirit / Kerosene		mg/kg									
Creosote		mg/kg									
Unknown TPH with ID		mg/kg	10.0			10.0					
Unknown TPHCWG		mg/kg									101.0
Total Sulphide		mg/kg									
Complex Cyanide		mg/kg									
Free (or Total) Cyanide		mg/kg									
Thiocyanate		mg/kg									
Elemental/Free Sulphur		mg/kg									
Phenols Input Total Phenols HPLC **OR** individual Phenol results.											
Phenol		mg/kg									
Cresols		mg/kg									
Xylenols		mg/kg									
Resourcinol		mg/kg									
Phenols Total by HPLC		mg/kg									
BTEX Input Total BTEX **OR** individual BTEX results.											
Benzene		mg/kg									
Toluene		mg/kg									
Ethylbenzene		mg/kg									
Xylenes		mg/kg									
Total BTEX		mg/kg									
PCBs (POPs)											
PCBs Total (eg EC7/WHO12)		mg/kg									
PBBs (POPs)											
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)		mg/kg									

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TP/WS/BH	WS09	WS10	WS10	WS10	WS11	WS11	WS12	WS12	WS12
Depth (m)	0.80	0.20	0.40	0.80	0.20	0.40	0.20	0.60	1.30
Envirolab reference									

POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.

2,3,7,8-TeCDD		mg/kg								
1,2,3,7,8-PeCDD		mg/kg								
1,2,3,4,7,8-HxCDD		mg/kg								
1,2,3,6,7,8-HxCDD		mg/kg								
1,2,3,7,8,9-HxCDD		mg/kg								
1,2,3,4,6,7,8-HpCDD		mg/kg								
OCDD		mg/kg								
2,3,7,8-TeCDF		mg/kg								
1,2,3,7,8-PeCDF		mg/kg								
2,3,4,7,8-PeCDF		mg/kg								
1,2,3,4,7,8-HxCDF		mg/kg								
1,2,3,6,7,8-HxCDF		mg/kg								
2,3,4,6,7,8-HxCDF		mg/kg								
1,2,3,7,8,9-HxCDF		mg/kg								
1,2,3,4,6,7,8-HpCDF		mg/kg								
1,2,3,4,7,8,9-HpCDF		mg/kg								
OCDF		mg/kg								
Total Dioxins and Furans		mg/kg								

Some Pesticides (POPs unless otherwise stated)

Aldrin		mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*		mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*		mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*		mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*		mg/kg								
Dieldrin	updated v5.4ei	mg/kg								
Endrin		mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH*	updated v5.4ei	mg/kg								
Heptachlor		mg/kg								
Hexachlorobenzene		mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*		mg/kg								
p,p'-DDT ***OR*** *Total DDT*	updated v5.4ei	mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*		mg/kg								
Chlordecone (kepone)		mg/kg								
Pentachlorobenzene		mg/kg								
Mirex		mg/kg								
Toxaphene (camphechlor)		mg/kg								

Tin

Tin *(leave empty if Organotin and Tin excl Organotin results used)*		mg/kg								

Organotin

Dibutyltin; DiBT		mg/kg								
Tributyltin; TriBT		mg/kg								
Triphenyltin; TriPT		mg/kg								
Tetrabutyltin; TeBT		mg/kg								

Tin excluding Organotin

Tin excl Organotin		mg/kg								

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TP/WS/BH	WS09	WS10	WS10	WS10	WS11	WS11	WS12	WS12	WS12
Depth (m)	0.80	0.20	0.40	0.80	0.20	0.40	0.20	0.60	1.30
Envirolab reference									

Asbestos in Soil	Thresholds									
Asbestos detected in Soil (enter Y or N)	Y		N	N		N	N	N	N	N
		Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7								
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%								
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.								
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y									

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05. Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.
All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00391	0.00000	0.00000	0.00320	0.00000	0.00000	0.00000	0.00000	0.00416
Irritant HP4	≥10%	<1%	0.00219	0.00000	0.00000	0.00070	0.00000	0.00000	0.00000	0.00000	0.00025
Irritant HP4	≥20%	<1%	0.00375	0.00000	0.00000	0.00321	0.00000	0.00000	0.00000	0.00000	0.01608
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002
Specifc Target Organ Toxicity HP5	≥1%		0.00365	0.00000	0.00000	0.00307	0.00000	0.00000	0.00000	0.00000	0.00403
Specifc Target Organ Toxicity HP5	≥10%		0.00140	0.00000	0.00000	0.00560	0.00000	0.00000	0.00000	0.00000	0.01250
Aspiration Toxicity HP5	≥10%		0.00100	0.00000	0.00000	0.00100	0.00000	0.00000	0.00000	0.00000	0.02260
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00028	0.00000	0.00000	0.00015	0.00000	0.00000	0.00000	0.00000	0.00015
Acute Toxicity HP6	≥5%	<0.1%	0.00407	0.00000	0.00000	0.00335	0.00000	0.00000	0.00000	0.00000	0.00446
Acute Toxicity HP6	≥25%	<1%	0.00550	0.00000	0.00000	0.00926	0.00000	0.00000	0.00000	0.00000	0.00465
Acute Toxicity HP6	≥0.25%	<0.1%	0.00002	0.00000	0.00000	0.00002	0.00000	0.00000	0.00000	0.00000	0.00002
Acute Toxicity HP6	≥2.5%	<0.1%	0.00365	0.00000	0.00000	0.00307	0.00000	0.00000	0.00000	0.00000	0.00403
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00035	0.00000	0.00000	0.00045	0.00000	0.00000	0.00000	0.00000	0.00027
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00402	0.00000	0.00000	0.00354	0.00000	0.00000	0.00000	0.00000	0.00432
Acute Toxicity HP6	≥3.5%	<0.1%	0.00042	0.00000	0.00000	0.00028	0.00000	0.00000	0.00000	0.00000	0.00042
Acute Toxicity HP6	≥22.5%	<1%	0.00514	0.00000	0.00000	0.00879	0.00000	0.00000	0.00000	0.00000	0.01685
Carcinogenic HP7	≥0.1%		0.00365	0.00000	0.00000	0.00560	0.00000	0.00000	0.00000	0.00000	0.01010
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01250
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		10.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		0.40000	#DIV/0!	#DIV/0!	0.40000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		6.76	0.00	0.00	7.47	0.00	0.00	0.00	0.00	7.34
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		6.76	0.00	0.00	7.47	0.00	0.00	0.00	0.00	7.34
Toxic for Reproduction HP10	≥0.3%		0.00182	0.00000	0.00000	0.00560	0.00000	0.00000	0.00000	0.00000	0.00343
Toxic for Reproduction HP10	≥3%		0.00365	0.00000	0.00000	0.00307	0.00000	0.00000	0.00000	0.00000	0.01010
Mutagenic HP11	≥0.1%		0.00365	0.00000	0.00000	0.00307	0.00000	0.00000	0.00000	0.00000	0.01010
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		10.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		0.40000	#DIV/0!	#DIV/0!	0.40000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic HP11	≥1%		0.00182	0.00000	0.00000	0.00263	0.00000	0.00000	0.00000	0.00000	0.00343
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00365	0.00000	0.00000	0.00307	0.00000	0.00000	0.00000	0.00000	0.00403
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.04999	0.00000	0.00000	0.07160	0.00000	0.00000	0.00000	0.00000	0.05671
Ecotoxic HP14	≥25%	<0.1%	0.01240	0.00000	0.00000	0.01780	0.00000	0.00000	0.00000	0.00000	0.01194
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.01340	0.00000	0.00000	0.01880	0.00000	0.00000	0.00000	0.00000	0.03452

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TP/WS/BH	WS09	WS10	WS10	WS10	WS11	WS11	WS12	WS12	WS12
Depth (m)	0.80	0.20	0.40	0.80	0.20	0.40	0.20	0.60	1.30
Envirolab reference									
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used), Sn, TriPT) ≥0.0025%	0.000004	0.000000	0.000000	0.000004	0.000000	0.000000	0.000000	0.000000	0.000004
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH, DiBT, TriBT) ≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistent Organic Pollutant (PCB, PBB or POP Pesticides) >0.005%	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistent Organic Pollutant (Total Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistent Organic Pollutant (Individual Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

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TP/WS/BH			WS12	WS11 - Tile						
Depth (m)			1.80	0.40						
Envirolab reference										
% Moisture		%								
pH (soil)										
pH (leachate)										
Arsenic		mg/kg								
Cadmium	updated v5.4ei	mg/kg								
Copper		mg/kg								
CrVI or Chromium		mg/kg								
Lead		mg/kg								
Mercury		mg/kg								
Nickel		mg/kg								
Selenium		mg/kg								
Zinc	updated v5.4ei	mg/kg								
Barium		mg/kg								
Beryllium		mg/kg								
Vanadium		mg/kg								
Cobalt	updated v5.4ei	mg/kg								
Manganese	updated v5.4ei	mg/kg								
Molybdenum		mg/kg								
Antimony		mg/kg								
Aluminium		mg/kg								
Bismuth		mg/kg								
CrIII		mg/kg								
Iron	updated v5.4ei	mg/kg								
Strontium		mg/kg								
Tellurium		mg/kg								
Thallium		mg/kg								
Titanium		mg/kg								
Tungsten		mg/kg								
Ammoniacal N		mg/kg								
ws Boron		mg/kg								
PAH (Input Total PAH **OR** individual PAH results)										
Acenaphthene		mg/kg								
Acenaphthylene		mg/kg								
Anthracene		mg/kg								
Benzo(a)anthracene		mg/kg								
Benzo(a)pyrene		mg/kg								
Benzo(b)fluoranthene		mg/kg								
Benzo(ghi)perylene		mg/kg								
Benzo(k)fluoranthene		mg/kg								
Chrysene		mg/kg								
Dibenzo(ah)anthracene		mg/kg								
Fluoranthene		mg/kg								
Fluorene		mg/kg								
Indeno(123cd)pyrene		mg/kg								
Naphthalene		mg/kg								
Phenanthrene		mg/kg								
Pyrene		mg/kg								
Coronene		mg/kg								
Total PAHs (16 or 17)		mg/kg								
TPH										
Petrol		mg/kg								
Diesel		mg/kg								
Lube Oil		mg/kg								
Crude Oil		mg/kg								
White Spirit / Kerosene		mg/kg								
Creosote		mg/kg								
Unknown TPH with ID		mg/kg								
Unknown TPHCWG		mg/kg	0.1							
Total Sulphide		mg/kg								
Complex Cyanide		mg/kg								
Free (or Total) Cyanide		mg/kg								
Thiocyanate		mg/kg								
Elemental/Free Sulphur		mg/kg								
Phenols Input Total Phenols HPLC **OR** individual Phenol results.										
Phenol		mg/kg								
Cresols		mg/kg								
Xylenols		mg/kg								
Resourcinol		mg/kg								
Phenols Total by HPLC		mg/kg								
BTEX Input Total BTEX **OR** individual BTEX results.										
Benzene		mg/kg								
Toluene		mg/kg								
Ethylbenzene		mg/kg								
Xylenes		mg/kg								
Total BTEX		mg/kg								
PCBs (POPs)										
PCBs Total (eg EC7/WHO12)		mg/kg								
PBBs (POPs)										
Hexabromobiphenyl (Total or PBB153; 2,2',4,4',5,5'- if only available)		mg/kg								

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TP/WS/BH		WS12	WS11 - Tile						
Depth (m)		1.80	0.40						
Envirolab reference									
POPs Dioxins and Furans Input Total Dioxins and Furans **OR** individual Dioxin and Furan results.									
2,3,7,8-TeCDD	mg/kg								
1,2,3,7,8-PeCDD	mg/kg								
1,2,3,4,7,8-HxCDD	mg/kg								
1,2,3,6,7,8-HxCDD	mg/kg								
1,2,3,7,8,9-HxCDD	mg/kg								
1,2,3,4,6,7,8-HpCDD	mg/kg								
OCDD	mg/kg								
2,3,7,8-TeCDF	mg/kg								
1,2,3,7,8-PeCDF	mg/kg								
2,3,4,7,8-PeCDF	mg/kg								
1,2,3,4,7,8-HxCDF	mg/kg								
1,2,3,6,7,8-HxCDF	mg/kg								
2,3,4,6,7,8-HxCDF	mg/kg								
1,2,3,7,8,9-HxCDF	mg/kg								
1,2,3,4,6,7,8-HpCDF	mg/kg								
1,2,3,4,7,8,9-HpCDF	mg/kg								
OCDF	mg/kg								
Total Dioxins and Furans	mg/kg								
Some Pesticides (POPs unless otherwise stated)									
Aldrin	mg/kg								
α Hexachlorocyclohexane (alpha-HCH) *(leave empty if total HCH results used)*	mg/kg								
β Hexachlorocyclohexane (beta-HCH) *(leave empty if total HCH results used)*	mg/kg								
α Cis-Chlordane (alpha) ***OR*** *Total Chlordane*	mg/kg								
δ Hexachlorocyclohexane (delta-HCH) *(leave empty if total HCH results used)*	mg/kg								
Dieldrin updated v5.4ei	mg/kg								
Endrin	mg/kg								
χ Hexachlorocyclohexane (gamma-HCH) (lindane) ***OR*** *Total HCH* updated v5.4ei	mg/kg								
Heptachlor	mg/kg								
Hexachlorobenzene	mg/kg								
o,p'-DDT *(leave empty if total DDT results used)*	mg/kg								
p,p'-DDT ***OR*** *Total DDT* updated v5.4ei	mg/kg								
χ Trans-Chlordane (gamma) *(leave empty if total Chlordane results used)*	mg/kg								
Chlordecone (kepone)	mg/kg								
Pentachlorobenzene	mg/kg								
Mirex	mg/kg								
Toxaphene (camphechlor)	mg/kg								
Tin									
Tin *(leave empty if Organotin and Tin excl Organotin results used)*	mg/kg								
Organotin									
Dibutyltin; DiBT	mg/kg								
Tributyltin; TriBT	mg/kg								
Triphenyltin; TriPT	mg/kg								
Tetrabutyltin; TeBT	mg/kg								
Tin excluding Organotin									
Tin excl Organotin	mg/kg								

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TP/WS/BH		WS12	WS11 - Tile						
Depth (m)		1.80	0.40						
Envirolab reference									
Asbestos in Soil	Thresholds								
Asbestos detected in Soil (enter Y or N)	Y								
		Asbestos in Soil above is "Y", the soil is Hazardous Waste HP5 and HP7							
Asbestos % Composition in Soil (Matrix Loose Fibres or Microscopic Identifiable Pieces only)	see "Carc HP7 % Asbestos in Soil (Fibres)" below	%							
Carcinogenic HP7 % Asbestos in Soil (fibres or micro pieces)	≥0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		If Asbestos in Soil above is "Y", but Asbestos % above is "<0.1%", the soil is Non Hazardous Waste. You can only use Asbestos % results where loose fibres or micro pieces are only present. You cannot use Asbestos % results when visual identifiable pieces are present.							
Asbestos Identifiable Pieces visible with the naked eye detected in the Soil (enter Y or N)	Y		Y						

If visual identifiable pieces of asbestos are present, you cannot use Asbestos % results and the whole soil sample is Hazardous Waste HP5 and HP7 Construction material containing Asbestos 17 06 05.
Therefore, if Asbestos in Soil above is "Y", the Asbestos % above is "<0.1%", but the Asbestos Identifiable Pieces visible with the naked eye is "Y", the soil is Hazardous Waste.

Identifiable Pieces are Cement, Fragments, Board, Rope etc. ie anything ACM that is not Loose Fibres.
All visual asbestos pieces need to be removed leaving only fibres (or micro pieces) with an Asbestos % Composition in Soil result of <0.1% for the soil to become non-hazardous waste.

Hazardous Property	Thresholds	Cut Off Value								
Corrosive HP8	≥5%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Irritant HP4	≥10%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Irritant HP4	≥20%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥20%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Specifc Target Organ Toxicity HP5	≥10%		0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Aspiration Toxicity HP5	≥10%		0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥25%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.25%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥2.5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥15%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥55%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.1%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥0.5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥3.5%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Acute Toxicity HP6	≥22.5%	<1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Carcinogenic HP7	≥0.1%		0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Carcinogenic HP7	≥0.1%		0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000	0.000000000
Carcinogenic HP7	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Carcinogenic HP7 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carcinogenic HP7 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
pH Corrosive HP8 pH (soil or leachate)	H8 ≥11.5		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pH Corrosive HP8 pH (soil or leachate)	H8 ≤2		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toxic for Reproduction HP10	≥0.3%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Toxic for Reproduction HP10	≥3%		0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Mutagenic HP11	≥0.1%		0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Mutagenic HP11 Unknown TPH with ID	≥1,000mg/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mutagenic HP11 b(a)p marker test (Unknown TPH with ID only)	≥0.01%		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Mutagenic HP11	≥1%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Produces Toxic Gases HP12 Sulphide	≥1,400mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Cyanide	≥1,200mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Produces Toxic Gases HP12 Thiocyanate	≥2,600mg/kg		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HP13 Sensitising	≥10%		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Ecotoxic HP14	≥1.0	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Ecotoxic HP14	≥25%	<0.1%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Ecotoxic HP14	≥25%	<0.1% (except CompCN + Thiocyanate + Xylene + BTEX 1%).	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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TP/WS/BH	WS12	WS11 - Tile							
Depth (m)	1.80	0.40							
Envirolab reference									
Ecotoxic HP14 individual substance specific thresholds (Benzo(a)anthracene, Dibenz(ah)anthracene (or Total PAH if only used), Sn, TriPT) ≥0.0025%	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Ecotoxic HP14 individual substance specific thresholds (Co, γ-HCH, DiBT, TriBT) ≥0.025%	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Persistent Organic Pollutant (PCB, PBB or POP Pesticides) >0.005%	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
Persistent Organic Pollutant (Total Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000
Persistent Organic Pollutant (Individual Dioxins+Furans) >0.0000015%	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000	0.0000000000

CALCULATION OF CLEAN COVER DEPTH (From BRE report BR 465)

Site: 515 Stockwood Road, Brislington
Ref: 732959
Date: 25/08/2017

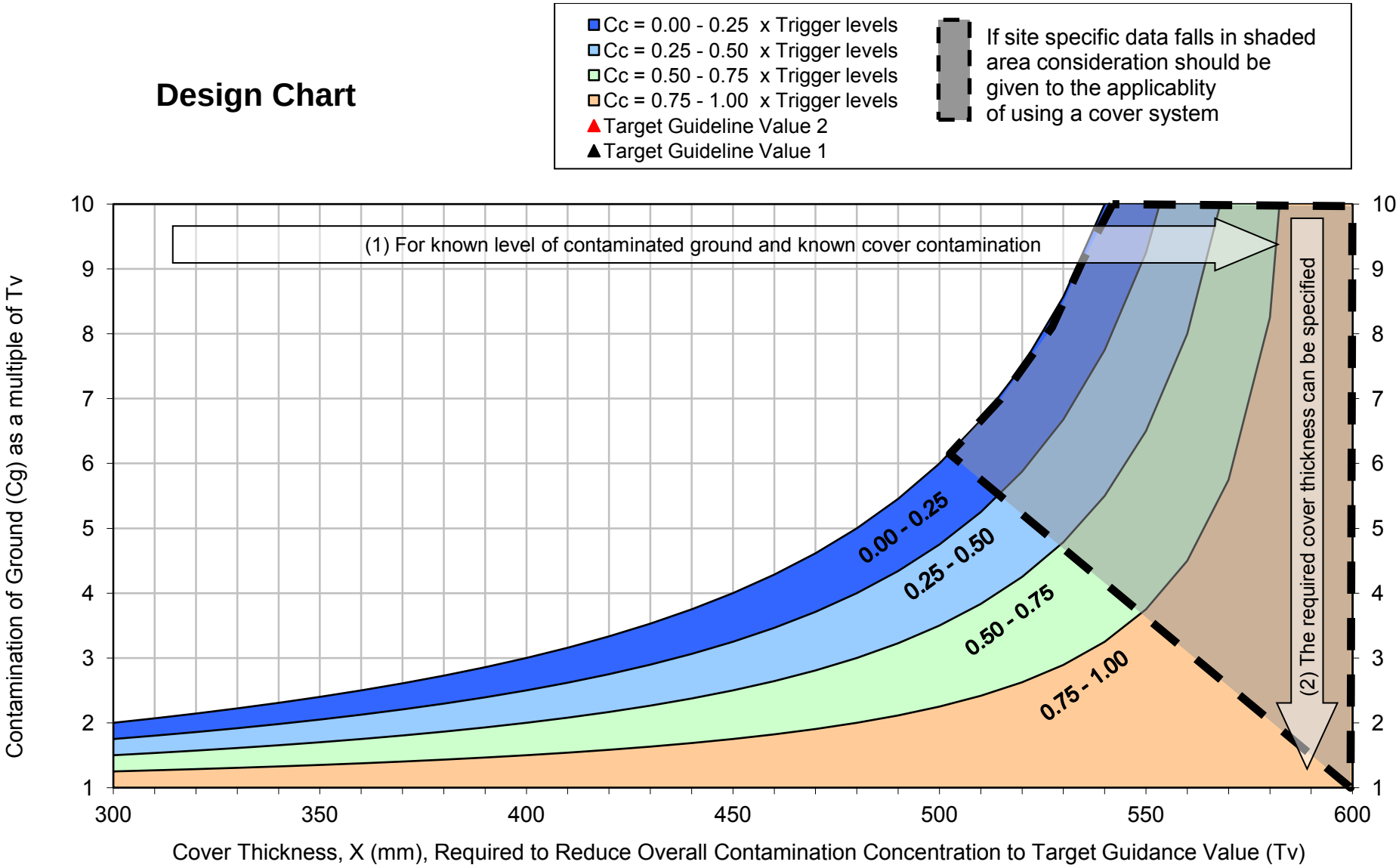
Calculations based on mixed zone (M)	600	mm

Contaminant	Site Data				Expressed as a Factor of Target Guideline Value				Cover Thickness Required for Compliance to Specified Target Guideline Value	
	Contamination of Ground	Contamination of Cover	Target Guideline Value 1	Target Guideline Value 2	Target Guideline Soil / Value 1	Target Guideline Cover / Value 1	Target Guideline Soil / Value 2	Target Guideline Cover / Value 2	Target Guideline Value 1	Target Guideline Value 2
	mg/kg		mg/kg		Fraction				(mm)	
Lead	508	77	310		1.6	0.2	No TV	No TV	276	No TV

Summary

	Target Guideline Value 1	Target Guideline Value 2
Number of contaminants	1	1
Number of contaminants **with no** thickness calculation	0	1
Breakdown - Number for which no TV specfied	0	1
Breakdown - Number for which no soil specified	0	0
Breakdown - Number for which no cover specified	0	0
Breakdown - Number for which cover > TV	0	0
Number of contaminants **with** thickness calculation	1	0
Breakdown - Number for which no cover required	0	0
Breakdown - Number for which cover required	1	0
* Outlying result		
Overall thickness of cover required	**276**	**0**

Design Chart



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is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005
General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope as detailed in and at the locations specified in the schedule to this certificate, and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009).

The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued by the United Kingdom Accreditation Service. The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from the UKAS website www.ukas.com.

This accreditation is subject to continuing conformity
with United Kingdom Accreditation Service requirements. The absence of a schedule on the UKAS website indicates that the accreditation is no longer in force.

[redacted]

Accreditation Ma *Accreditation Service*

Initial Accreditation date
2 December 1992

This certificate issued on
12 November 2012

UKAS is appointed as the sole national accreditation body for the UK by The Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department for Business, Innovation and Skills (BIS).

APPENDIX E - BACKGROUND TO GEOENVIRONMENTAL ASSESSMENT

(i) RSK Group Generic Assessment Criteria (GAC)

(ii) UKWIR Guidelines

(iii) Risk Assessment Methodology

Generic assessment criteria for human health: residential scenario without home-grown produce

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009[1]. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009[2]. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)[3,4], as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)[5] used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010[3]). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and adopts them as GAC for these six substances.

For all other substances the C4SL exposure modifications relevant for residential without home-grown produce end use have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) and reducing exposure frequency for dermal contact outdoors.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015[7] or by the USEPA[14], where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.071, supporting EA guidance[5,8,9] and revised exposure scenarios published for the C4SL[3]. The SAC are also termed GAC.

Conceptual model

In accordance with SR3[5], the residential without home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance with Box 3.1 of SR3[5], the pathways considered for production of the SAC in the residential without home-grown produce scenario are

- direct soil and dust ingestion in areas of soft landscaping
- dermal contact with soil and indoor dust

- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium[1], the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the TDI_{oral} and TDI_{inh}, are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase[9]. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached[9]. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required[9]:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook[9], this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook[9], which explains how to calculate an effective assessment criterion manually.

SR3[5] states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the

polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7[10], the EA TOX[1] reports, the C4SL SP1010 project report and associated appendices[3,6], the 2015 LQM/CIEH report[7] or the USEPA IRIS database[14]. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for aromatic hydrocarbon C_8–C_9 (styrene), 1,2,4-trimethylbenzene and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report[11].

For TPH, aromatic hydrocarbons C_5–C_8 were not modelled, as this range comprises benzene and toluene, which are modelled separately. The aromatic C_8–C_9 hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for aromatic C_8–C_9 have been taken from styrene.

Physical parameters

For the residential without home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. SR3[5] notes this residential building type to be the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3[3], with a dust loading factor detailed in Section 9.3 of SR3[5]. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3[5]. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for this SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

Summary of modifications to the default CLEA SR3[5] input parameters for residential without home-grown produce

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3[5]. Modifications to the default SR3[5] exposure scenarios based on the C4SL exposure scenarios[3] are presented in Table 2 below.

The final selected GAC are presented by pathway in Table 3 and the combined GAC in Table 4.

Figure 1: Conceptual model for CLEA residential scenario without home-grown produce

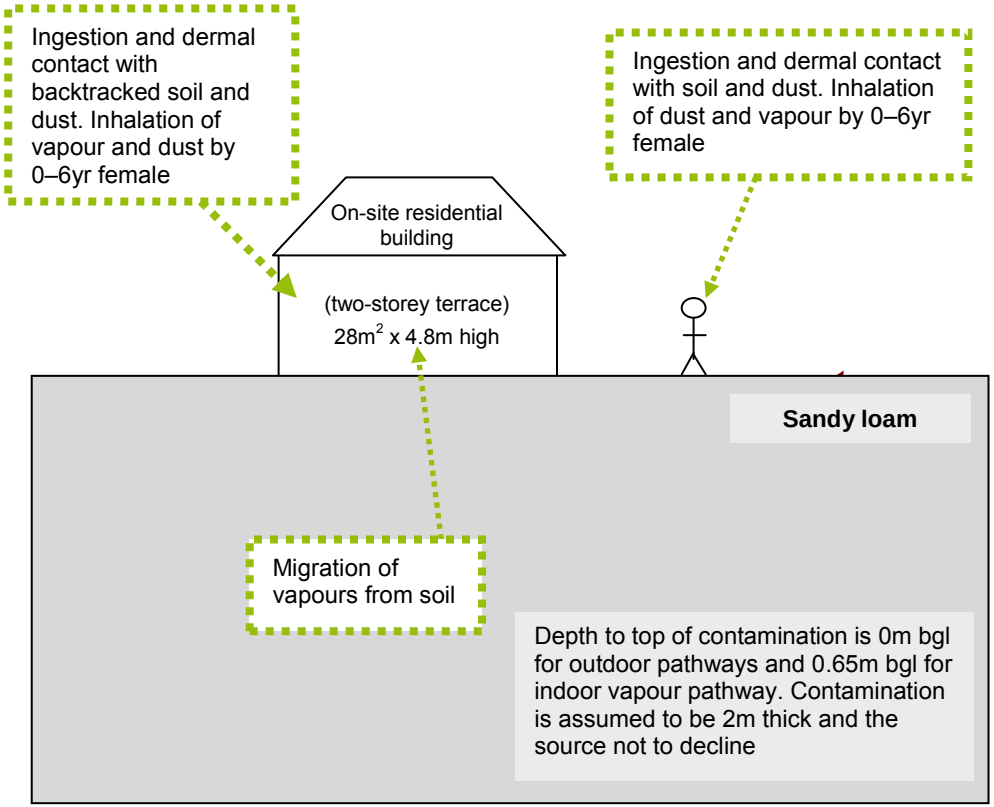

Table 1: Exposure assessment parameters for residential scenario without home-grown produce – inputs for CLEA model

Parameter	Value	Justification
Land use	Residential without home-grown produce	Chosen land use
Receptor	Female child	Key generic assumption given in Box 3.1, SR3[5]
Building	Small terraced house	Key generic assumption given in Box 3.1, SR3[5]. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3)[5]
Soil type	Sandy loam	Most common UK soil type (Section 4.3.1, from Table 3.1, SR3)[5]
Start age class (AC)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3[5]
End AC	6	
SOM (%)	6	Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents'[13]
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential without home-grown produce – modified receptor data

Parameter	Unit	Age class					
		1	2	3	4	5	6
Soil to skin adherence factor – (outdoor)	mg soil/cm^2 skin	0.1	0.1	0.1	0.1	0.1	0.1
Justification		Table 3.5, SP1010[3]					
Inhalation rate	m^3 day^{-1}	5.4	8.0	8.9	10.1	10.1	10.1
Justification		Mean value USEPA, 2011[12]; Table 3.2, SP1010[3]					
Notes: For **cadmium**, the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI_{oral} and TDI_{inh} are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3[1], Science Report SC050021/Cadmium SGV[1] and the project report SP1010[3] for more information.							

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GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITHOUT HOME-GROWN PRODUCE

Table 3

Human Health Generic Assessment Criteria by Pathway for Residential Scenario Without Home-Grown Produce

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
		Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals													
Arsenic	(a,b)	3.99E+01	5.26E+02	NR	NR	3.99E+01	5.26E+02	NR	NR	3.99E+01	5.26E+02	NR	NR
Cadmium	(a)	1.95E+02	4.88E+02	1.49E+02	NR	1.95E+02	4.88E+02	1.49E+02	NR	1.95E+02	4.88E+02	1.49E+02	NR
Chromium (III) - trivalent	(c)	1.98E+04	9.07E+02	NR	NR	1.98E+04	9.07E+02	NR	NR	1.98E+04	9.07E+02	NR	NR
Chromium (VI) - hexavalent	(a,d)	5.91E+01	2.06E+01	NR	NR	5.91E+01	2.06E+01	NR	NR	5.91E+01	2.06E+01	NR	NR
Copper		1.08E+04	1.41E+04	7.13E+03	NR	1.08E+04	1.41E+04	7.13E+03	NR	1.08E+04	1.41E+04	7.13E+03	NR
Lead	(a)	3.14E+02	NR	NR	NR	3.14E+02	NR	NR	NR	3.14E+02	NR	NR	NR
Elemental Mercury (Hg^0)	(d)	NR	2.41E-01	NR	4.31E+00	NR	5.74E-01	NR	1.07E+01	NR	1.25E+00	NR	2.58E+01
Inorganic Mercury (Hg^{2+})		5.71E+01	3.63E+03	5.62E+01	NR	5.71E+01	3.63E+03	5.62E+01	NR	5.71E+01	3.63E+03	5.62E+01	NR
Methyl Mercury (Hg^{4+})		1.80E+01	1.87E+01	9.16E+00	7.33E+01	1.80E+01	3.62E+01	1.20E+01	1.42E+02	1.80E+01	7.68E+01	1.46E+01	3.04E+02
Nickel	(d)	1.88E+02	1.81E+02	NR	NR	1.88E+02	1.81E+02	NR	NR	1.88E+02	1.81E+02	NR	NR
Selenium	(b)	4.31E+02	NR	NR	NR	4.31E+02	NR	NR	NR	4.31E+02	NR	NR	NR
Zinc	(b)	4.05E+04	3.63E+07	NR	NR	4.05E+04	3.63E+07	NR	NR	4.05E+04	3.63E+07	NR	NR
Cyanide (free)		4.03E+01	1.37E+04	4.02E+01	NR	4.03E+01	1.37E+04	4.02E+01	NR	4.03E+01	1.37E+04	4.02E+01	NR
Volatile Organic Compounds													
Benzene	(a)	7.36E+01	9.01E-01	8.90E-01	1.22E+03	7.36E+01	1.68E+00	1.64E+00	2.26E+03	7.36E+01	3.48E+00	3.33E+00	4.71E+03
Toluene		2.87E+04	9.08E+02	8.80E+02	8.69E+02	2.87E+04	2.00E+03	1.87E+03	1.92E+03	2.87E+04	4.55E+03	3.93E+03	4.36E+03
Ethylbenzene		1.29E+04	8.34E+01	8.29E+01	5.18E+02	1.29E+04	1.96E+02	1.93E+02	1.22E+03	1.29E+04	4.58E+02	4.42E+02	2.84E+03
Xylene - m		2.32E+04	8.25E+01	8.22E+01	6.25E+02	2.32E+04	1.95E+02	1.93E+02	1.47E+03	2.32E+04	4.56E+02	4.47E+02	3.46E+03
Xylene - o		2.32E+04	8.87E+01	8.83E+01	4.78E+02	2.32E+04	2.08E+02	2.06E+02	1.12E+03	2.32E+04	4.86E+02	4.76E+02	2.62E+03
Xylene - p		2.32E+04	7.93E+01	7.90E+01	5.76E+02	2.32E+04	1.86E+02	1.85E+02	1.35E+03	2.32E+04	4.36E+02	4.28E+02	3.17E+03
Total xylene		2.32E+04	7.93E+01	7.90E+01	6.25E+02	2.32E+04	1.86E+02	1.85E+02	1.47E+03	2.32E+04	4.36E+02	4.28E+02	3.46E+03
Methyl tertiary-Butyl ether (MTBE)		3.87E+04	1.04E+02	1.04E+02	2.04E+04	3.87E+04	1.69E+02	1.69E+02	3.31E+04	3.87E+04	3.21E+02	3.19E+02	6.27E+04
Trichloroethene		6.45E+01	1.72E-02	1.72E-02	1.54E+03	6.45E+01	3.59E-02	3.59E-02	3.22E+03	6.45E+01	7.98E-02	7.97E-02	7.14E+03
Tetrachloroethene		7.13E+02	1.79E-01	1.79E-01	4.24E+02	7.13E+02	4.02E-01	4.02E-01	9.51E+02	7.13E+02	9.21E-01	9.20E-01	2.18E+03
1,1,1-Trichloroethane		7.74E+04	9.01E+00	9.01E+00	1.43E+03	7.74E+04	1.84E+01	1.84E+01	2.92E+03	7.74E+04	4.04E+01	4.04E+01	6.39E+03
1,1,1,2 Tetrachloroethane		7.34E+02	1.54E+00	1.53E+00	2.60E+03	7.34E+02	3.56E+00	3.55E+00	6.02E+03	7.34E+02	8.29E+00	8.20E+00	1.40E+04
1,1,2,2-Tetrachloroethane		7.34E+02	3.92E+00	3.90E+00	2.67E+03	7.34E+02	8.04E+00	7.95E+00	5.46E+03	7.34E+02	1.76E+01	1.72E+01	1.20E+04
Carbon Tetrachloride		5.15E+02	2.58E-02	2.58E-02	1.52E+03	5.15E+02	5.65E-02	5.64E-02	3.32E+03	5.15E+02	1.28E-01	1.28E-01	7.54E+03
1,2-Dichloroethane		1.55E+01	9.20E-03	9.20E-03	3.41E+03	1.55E+01	1.33E-02	1.33E-02	4.91E+03	1.55E+01	2.28E-02	2.27E-02	8.43E+03
Vinyl Chloride		1.81E+00	7.73E-04	7.73E-04	1.36E+03	1.81E+00	1.00E-03	9.99E-04	1.76E+03	1.81E+00	1.53E-03	1.53E-03	2.69E+03
1,2,4-Trimethylbenzene		NR	5.58E+00	NR	4.74E+02	NR	1.29E+01	NR	1.16E+03	NR	2.69E+01	NR	2.76E+03
1,3,5-Trimethylbenzene	(e)	NR	NR	NR	2.30E+02	NR	NR	NR	5.52E+02	NR	NR	NR	1.30E+03
Semi-Volatile Organic Compounds													
Acenaphthene		7.64E+03	4.86E+04	6.60E+03	5.70E+01	7.64E+03	1.18E+05	7.17E+03	1.41E+02	7.64E+03	2.68E+05	7.43E+03	3.36E+02
Acenaphthylene		7.65E+03	4.59E+04	6.55E+03	8.61E+01	7.65E+03	1.11E+05	7.15E+03	2.12E+02	7.65E+03	2.53E+05	7.42E+03	5.06E+02
Anthracene		3.82E+04	1.53E+05	3.06E+04	1.17E+00	3.82E+04	3.77E+05	3.47E+04	2.91E+00	3.82E+04	8.76E+05	3.66E+04	6.96E+00
Benzo(a)anthracene		1.98E+01	2.47E+01	1.10E+01	1.71E+00	1.98E+01	4.37E+01	1.36E+01	4.28E+00	1.98E+01	6.26E+01	1.50E+01	1.03E+01
Benzo(a)pyrene	(a)	5.34E+00	3.51E+01	NR	9.11E-01	5.34E+00	3.77E+01	NR	2.28E+00	5.34E+00	3.89E+01	NR	5.46E+00
Benzo(b)fluoranthene		4.97E+00	1.93E+01	3.95E+00	1.22E+00	4.97E+00	2.13E+01	4.03E+00	3.04E+00	4.97E+00	2.22E+01	4.06E+00	7.29E+00
Benzo(g,h,i)perylene		4.38E+02	1.87E+03	3.55E+02	1.54E-02	4.38E+02	1.94E+03	3.58E+02	3.85E-02	4.38E+02	1.97E+03	3.59E+02	9.23E-02
Benzo(k)fluoranthene		1.31E+02	5.41E+02	1.06E+02	6.87E-01	1.31E+02	5.76E+02	1.07E+02	1.72E+00	1.31E+02	5.91E+02	1.07E+02	4.12E+00
Chrysene		3.95E+01	1.19E+02	2.97E+01	4.40E-01	3.95E+01	1.49E+02	3.12E+01	1.10E+00	3.95E+01	1.66E+02	3.19E+01	2.64E+00
Dibenzo(a,h)anthracene		3.95E-01	1.45E+00	3.10E-01	3.93E-03	3.95E-01	1.64E+00	3.18E-01	9.82E-03	3.95E-01	1.74E+00	3.22E-01	2.36E-02
Fluoranthene		1.59E+03	3.83E+04	1.53E+03	1.89E+01	1.59E+03	8.87E+04	1.56E+03	4.73E+01	1.59E+03	1.83E+05	1.58E+03	1.13E+02
Fluorene		5.09E+03	6.20E+03	2.80E+03	3.09E+01	5.09E+03	1.53E+04	3.82E+03	7.65E+01	5.09E+03	3.62E+04	4.47E+03	1.83E+02
Indeno(1,2,3-cd)pyrene		5.65E+01	2.12E+02	4.46E+01	6.13E-02	5.65E+01	2.38E+02	4.56E+01	1.53E-01	5.65E+01	2.50E+02	4.60E+01	3.68E-01

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITHOUT HOME-GROWN PRODUCE

Table 3

Human Health Generic Assessment Criteria by Pathway for Residential Scenario Without Home-Grown Produce

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
		Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Naphthalene		2.50E+03	2.33E+01	2.31E+01	7.64E+01	2.50E+03	5.58E+01	5.46E+01	1.83E+02	2.50E+03	1.31E+02	1.25E+02	4.32E+02
Phenanthrene		1.58E+03	7.17E+03	1.30E+03	3.60E+01	1.58E+03	1.76E+04	1.45E+03	8.96E+01	1.58E+03	4.07E+04	1.52E+03	2.14E+02
Pyrene		3.82E+03	8.79E+04	3.66E+03	2.20E+00	3.82E+03	2.04E+05	3.75E+03	5.49E+00	3.82E+03	4.23E+05	3.79E+03	1.32E+01
Phenol		6.48E+04	4.58E+02	4.55E+02	2.42E+04	6.48E+04	6.95E+02	6.88E+02	3.81E+04	6.48E+04	1.19E+03	1.17E+03	7.03E+04
Total Petroleum Hydrocarbons													
Aliphatic hydrocarbons EC_5-EC_6		3.23E+05	4.24E+01	4.24E+01	3.04E+02	3.23E+05	7.79E+01	7.79E+01	5.58E+02	3.23E+05	1.61E+02	1.61E+02	1.15E+03
Aliphatic hydrocarbons >EC_6-EC_8		3.23E+05	1.04E+02	1.04E+02	1.44E+02	3.23E+05	2.31E+02	2.31E+02	3.22E+02	3.23E+05	5.29E+02	5.29E+02	7.36E+02
Aliphatic hydrocarbons >EC_8-EC_{10}		6.45E+03	2.68E+01	2.68E+01	7.77E+01	6.45E+03	6.55E+01	6.53E+01	1.90E+02	6.45E+03	1.56E+02	1.55E+02	4.51E+02
Aliphatic hydrocarbons >EC_{10}-EC_{12}		6.45E+03	1.33E+02	1.32E+02	4.75E+01	6.45E+03	3.31E+02	3.27E+02	1.18E+02	6.45E+03	7.93E+02	7.67E+02	2.83E+02
Aliphatic hydrocarbons >EC_{12}-EC_{16}		6.45E+03	1.11E+03	1.06E+03	2.37E+01	6.45E+03	2.78E+03	2.42E+03	5.91E+01	6.45E+03	6.67E+03	4.37E+03	1.42E+02
Aliphatic hydrocarbons >EC_{16}-EC_{35}	(b)	6.50E+04	NR	NR	8.48E+00	9.25E+04	NR	NR	2.12E+01	1.11E+05	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC_{35}-EC_{44}	(b)	6.50E+04	NR	NR	8.48E+00	9.25E+04	NR	NR	2.12E+01	1.11E+05	NR	NR	5.09E+01
Aromatic hydrocarbons >EC_8-EC_9 (styrene)		1.54E+03	5.22E+02	3.90E+02	6.26E+02	1.54E+03	1.20E+03	6.76E+02	1.44E+03	1.54E+03	2.79E+03	9.93E+02	3.35E+03
Aromatic hydrocarbons >EC_9-EC_{10}		2.58E+03	4.74E+01	4.72E+01	6.13E+02	2.58E+03	1.16E+02	1.15E+02	1.50E+03	2.58E+03	2.77E+02	2.69E+02	3.58E+03
Aromatic hydrocarbons >EC_{10}-EC_{12}		2.58E+03	2.58E+02	2.52E+02	3.64E+02	2.58E+03	6.39E+02	5.94E+02	8.99E+02	2.58E+03	1.52E+03	1.24E+03	2.15E+03
Aromatic hydrocarbons >EC_{12}-EC_{16}		2.58E+03	2.85E+03	1.80E+03	1.69E+02	2.58E+03	7.07E+03	2.30E+03	4.19E+02	2.58E+03	1.68E+04	2.48E+03	1.00E+03
Aromatic hydrocarbons >EC_{16}-EC_{21}	(b)	1.86E+03	NR	NR	5.37E+01	1.90E+03	NR	NR	1.34E+02	1.92E+03	NR	NR	3.21E+02
Aromatic hydrocarbons >EC_{21}-EC_{35}	(b)	1.93E+03	NR	NR	4.83E+00	1.93E+03	NR	NR	1.21E+01	1.93E+03	NR	NR	2.90E+01
Aromatic hydrocarbons >EC_{35}-EC_{44}	(b)	1.93E+03	NR	NR	4.83E+00	1.93E+03	NR	NR	1.21E+01	1.93E+03	NR	NR	2.90E+01

Notes:

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

Calculated SAC exceeds soil saturation limit and may significantly affect the interpretation of any exceedances as the contribution of the indoor and outdoor vapour pathway to total exposure is >10%.

Calculated SAC exceeds soil saturation limit but the exceedance will not affect the SAC significantly as the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.

Calculated SAC does not exceed the soil saturation limit.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)

(a) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.

(b) SAC for selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITHOUT HOME-GROWN PRODUCE

Table 4
Human health generic assessment criteria for residential without home-grown produce

Compound	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals			
Arsenic	40	40	40
Cadmium	149	149	149
Chromium (III) - trivalent	910	910	910
Chromium (VI) - hexavalent	21	21	21
Copper	7,100	7,100	7,100
Lead	310	310	310
Elemental Mercury (Hg^0)	0.2	0.6	1.2
Inorganic Mercury (Hg^{2+})	56	56	56
Methyl Mercury (Hg^{4+})	9	12	15
Nickel	180	180	180
Selenium	430	430	430
Zinc	40,000	40,000	40,000
Cyanide (free)	40	40	40
Volatile Organic Compounds			
Benzene	0.9	1.6	3.3
Toluene	900 (869)	1,900	3,900
Ethylbenzene	80	190	440
Xylene - m	80	190	450
Xylene - o	90	210	480
Xylene - p	80	180	430
Total xylene	80	180	430
Methyl tertiary-Butyl ether (MTBE)	100	170	320
Trichloroethene	0.02	0.04	0.08
Tetrachloroethene	0.2	0.4	0.9
1,1,1-Trichloroethane	9.0	18.4	40.4
1,1,1,2 Tetrachloroethane	1.5	3.5	8.2
1,1,2,2-Tetrachloroethane	3.9	8.0	17.2
Carbon Tetrachloride	0.026	0.056	0.128
1,2-Dichloroethane	0.009	0.013	0.023
Vinyl Chloride	0.0008	0.0010	0.0015
1,2,4-Trimethylbenzene	5.6	12.9	26.9
1,3,5-Trimethylbenzene	NR	NR	NR
Semi-Volatile Organic Compounds			
Acenaphthene	6,600 (57)	7,200	7,400
Acenaphthylene	6,600 (86)	7,200	7,400
Anthracene	31,000 (1.17)	35,000	37,000
Benzo(a)anthracene	11.0	13.6	15.0
Benzo(a)pyrene	5.3	5.3	5.3
Benzo(b)fluoranthene	4.0	4.0	4.1
Benzo(g,h,i)perylene	355	358	359
Benzo(k)fluoranthene	106	107	107
Chrysene	30	31	32
Dibenzo(a,h)anthracene	0.31	0.32	0.32
Fluoranthene	1,500	1,600	1,600
Fluorene	2,800 (31)	3,800 (77)	4,500 (183)
Indeno(1,2,3-cd)pyrene	45	46	46
Naphthalene	23	55	125
Phenanthrene	1,300 (36)	1,450	1,520
Pyrene	3,700	3,800	3,800
Phenol	440*	688	1,170
Total Petroleum Hydrocarbons			
Aliphatic hydrocarbons EC_5-EC_6	42	78	161
Aliphatic hydrocarbons >EC_6-EC_8	100	230	530
Aliphatic hydrocarbons >EC_8-EC_{10}	27	65	155
Aliphatic hydrocarbons >EC_{10}-EC_{12}	130 (48)	330 (118)	770 (283)
Aliphatic hydrocarbons >EC_{12}-EC_{16}	1,100 (24)	2,400 (59)	4,400 (142)
Aliphatic hydrocarbons >EC_{16}-EC_{35}	65,000 (8)	92,000 (21)	111,000
Aliphatic hydrocarbons >EC_{35}-EC_{44}	65,000 (8)	92,000 (21)	111,000
Aromatic hydrocarbons >EC_8-EC_9 (styrene)	390	676	993
Aromatic hydrocarbons >EC_9-EC_{10}	47	115	269
Aromatic hydrocarbons >EC_{10}-EC_{12}	300	600	1,200
Aromatic hydrocarbons >EC_{12}-EC_{16}	1,800 (169)	2,300 (419)	2,500
Aromatic hydrocarbons >EC_{16}-EC_{21}	1,900	1,900	1,900
Aromatic hydrocarbons >EC_{21}-EC_{35}	1,900	1,900	1,900
Aromatic hydrocarbons >EC_{35}-EC_{44}	1,900	1,900	1,900
Minerals			
Asbestos	No asbestos detected with ID or <0.001% dry weight[1]		

Notes:

'-' Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used

EC - equivalent carbon. SAC - soil assessment criteria.

[1] LOD for weight of asbestos per unit weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry.

The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58.
1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3.

(VALUE IN BRACKETS)

RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.

Generic assessment criteria for human health: residential scenario with home-grown produce

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009[1]. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009[2]. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)[3,4], as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)[5] used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010[3]). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and adopts them as GAC for these six substances.

For all other substances the C4SL exposure modifications, with the exception of the "top two" produce type approach taken in the C4SL, have been applied to the current RSK GAC. These include alterations to daily inhalation rates for residential and commercial scenarios, reducing soil adherence factors in children (age classes 1 to 12 only) for residential land use, reducing exposure frequency for dermal contact outdoors for residential land use, and updated produce type consumption rates (90th percentile) based on recent data from the National Diet and Nutrition Survey.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015[7] or by the USEPA[14], where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.071, supporting EA guidance[5,8,9] and revised exposure scenarios published for the C4SL[3]. The SAC are also termed GAC.

Conceptual model

In accordance with SR3[5], the residential with home-grown produce scenario considers risks to a female child between the ages of 0 and 6 years old as the highest risk scenario. In accordance with Box 3.1 of SR3[5], the pathways considered for production of the SAC in the residential with home-grown produce scenario are

- direct soil and dust ingestion

- consumption of home-grown produce
- consumption of soil attached to home-grown produce
- dermal contact with soil and indoor dust
- inhalation of indoor and outdoor dust and vapours.

Figure 1 is a conceptual model illustrating these linkages.

In line with guidance in the EA SGV report for cadmium[1], the RSK GAC for cadmium has been derived based on estimates representative of lifetime exposure. Although young children are generally more likely to have higher exposures to soil contaminants, the renal toxicity of cadmium, and the derivation of the TDI_{oral} and TDI_{inh}, are based on considerations of the kidney burden accumulated over 50 years or so. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase[9]. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached[9]. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required[9]:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook[9], this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook[9], which explains how to calculate an effective assessment criterion manually.

SR3[5] states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are

at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database for all petroleum hydrocarbon fractions (including BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7[10], the EA TOX[1] reports, the C4SL SP1010 project report and associated appendices[3,6], the 2015 LQM/CIEH report[7] or the USEPA IRIS database[14]. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for aromatic hydrocarbon C_8–C_9 (styrene), 1,2,4-trimethylbenzene and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report[11].

For TPH, aromatic hydrocarbons C_5–C_8 were not modelled, as this range comprises benzene and toluene, which are modelled separately. The aromatic C_8–C_9 hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for aromatic C_8–C_9 have been taken from styrene.

Physical parameters

For the residential with home-grown produce scenario, the CLEA default building is a small, two-storey terrace house with a concrete ground-bearing slab. The house is assumed to have a 100m^2 private garden consisting of lawn and flowerbeds, incorporating a 20m^2 plot for growing fruit and vegetables consumed by the residents. SR3[5] notes this residential building type to be the most conservative in terms of potential for vapour intrusion. The building parameters used in the production of the RSK GACs are the default CLEA v1.06 inputs presented in Table 3.3 of SR3[3], with a dust loading factor detailed in Section 9.3 of SR3[5]. The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3[5]. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

Summary of modifications to the default CLEA SR3[5] input parameters for residential with home-grown produce land-use scenario

In summary, the RSK GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3[5]. Modifications to the default SR3[5] exposure scenarios based on the C4SL exposure scenarios[3] are presented in Tables 2 and 3 below.

The final selected GAC are presented by pathway in Table 4 and the combined GAC in Table 5.

Figure 1: Conceptual model for residential scenario with home-grown produce

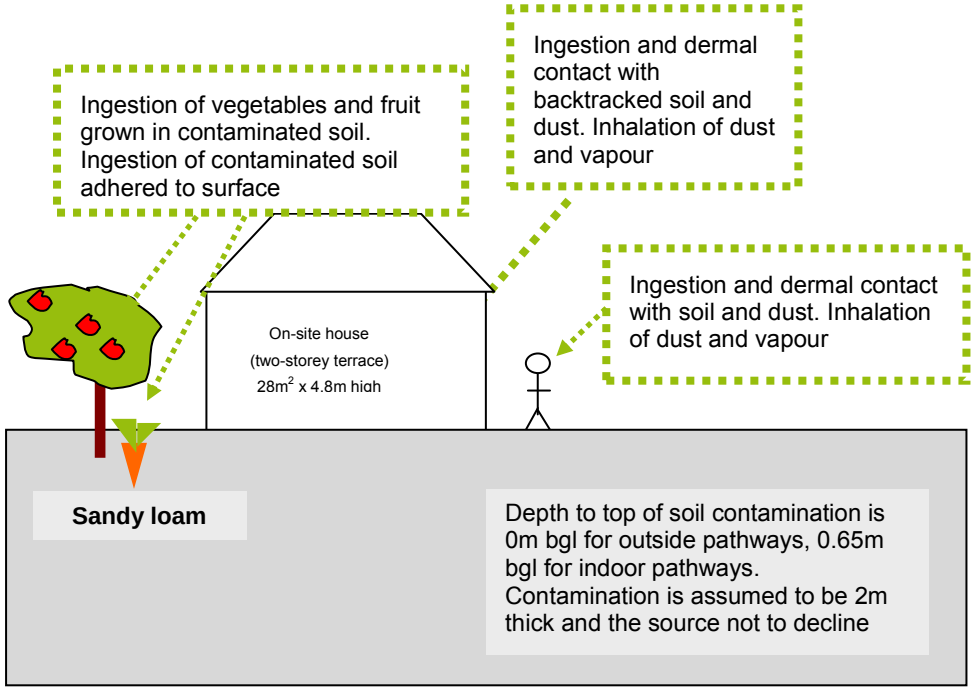

Table 1: Exposure assessment parameters for residential scenario with home-grown produce – inputs for CLEA model

Parameter	Value	Justification
Land use	Residential with homegrown produce	Chosen land use
Receptor	Female child age 1 to 6	Key generic assumption given in Box 3.1, SR3[5]
Building	Small terraced house	Key generic assumption given in Box 3.1, SR3. Small, two-storey terraced house chosen, as it is the most conservative residential building type in terms of protection from vapor intrusion (Section 3.4.6, SR3)[5]
Soil type	Sandy Loam	Most common UK soil type (Section 4.3.1, from Table 3.1, SR3)[5]
Start AC (age class)	1	Range of age classes corresponding to key generic assumption that the critical receptor is a young female child aged 0–6. From Box 3.1, SR3[5]
End AC (age class)	6	
SOM (%)	6	Representative of sandy loamy soil according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents'[13]
	1	To provide SAC for sites where SOM <6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Residential with home-grown produce – modified home-grown produce data

Name	Consumption rate 90th percentile (g FW kg^{-1} BW day^{-1}) by age class						Dry weight conversion factor (g DW g^{-1} FW)	Home-grown fraction (average)	Home-grown fraction (high end)	Soil loading factor (g g^{-1} DW)	Preparation correction factor
	1	2	3	4	5	6					
Green vegetables	7.12	5.87	5.87	5.87	4.53	4.53	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	10.7	2.83	2.83	2.83	2.14	2.14	0.103	0.06	0.4	1.00E-03	1.00E+00
Tuber vegetables	16	6.6	6.6	6.6	4.95	4.95	0.21	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	1.83	3.39	3.39	3.39	2.24	2.24	0.058	0.06	0.4	1.00E-03	6.00E-01
Shrub fruit	2.23	0.46	0.46	0.46	0.19	0.19	0.166	0.09	0.6	1.00E-03	6.00E-01
Tree fruit	3.82	10.3	10.3	10.3	5.16	5.16	0.157	0.04	0.27	1.00E-03	6.00E-01
Justification	Table 3.4, SP1010 (3)						Table 6.3, SR3(5)	Table 4.19, SR3(5)		Table 6.3, SR3(5)	

Table 3: Residential with home-grown produce – modified and use and receptor data

Parameter	Unit	Age class					
		1	2	3	4	5	6
EF (soil and dust ingestion)	day yr^{-1}	180	365	365	365	365	365
EF (consumption of home-grown produce)	day yr^{-1}	180	365	365	365	365	365
EF (skin contact, indoor)	day yr^{-1}	180	365	365	365	365	365
EF (skin contact, outdoor)	day yr^{-1}	170	170	170	170	170	170
EF (inhalation of dust and vapour, indoor)	day yr^{-1}	365	365	365	365	365	365
EF (inhalation of dust and vapour, outdoor)	day yr^{-1}	365	365	365	365	365	365
Justification		Table 3.5, SP1010(3); Table 3.1, SR3(5)					
Soil to skin adherence factor (outdoor)	mg cm^{-2} day^{-1}	0.1	0.1	0.1	0.1	0.1	0.1
Justification		Table 3.5, SP1010(3)					
Inhalation rate	m^3 day^{-1}	5.4	8.0	8.9/f	10.1	10.1	10.1
Justification		Mean value USEPA, 2011(12); Table 3.2, SP1010(3)					
Notes: For **cadmium**, the exposure assessment for a residential land use is based on estimates representative of lifetime exposure AC1-18. This is because the TDI_{oral} and TDI_{inh} are based on considerations of the kidney burden accumulated over 50 years. It is therefore reasonable to consider exposure not just in childhood but averaged over a longer period. See the Environment Agency Science Report SC05002/ TOX 3(1), Science Report SC050021/Cadmium SGV(1) and the project report SP1010(3) for more information.							

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GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 4

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
		Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals													
Arsenic	(a,b)	3.71E+01	5.26E+02	NR	NR	3.71E+01	5.26E+02	NR	NR	3.71E+01	5.26E+02	NR	NR
Cadmium	(a)	2.30E+01	4.88E+02	2.21E+01	NR	2.30E+01	4.88E+02	2.21E+01	NR	2.30E+01	4.88E+02	2.21E+01	NR
Chromium (III) - trivalent	(c)	1.84E+04	9.07E+02	NR	NR	1.84E+04	9.07E+02	NR	NR	1.84E+04	9.07E+02	NR	NR
Chromium (VI) - hexavalent	(a,d)	5.85E+01	2.06E+01	NR	NR	5.85E+01	2.06E+01	NR	NR	5.85E+01	2.06E+01	NR	NR
Copper		2.72E+03	1.41E+04	2.47E+03	NR	2.72E+03	1.41E+04	2.47E+03	NR	2.72E+03	1.41E+04	2.47E+03	NR
Lead	(a)	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR	2.01E+02	NR	NR	NR
Elemental Mercury (Hg^0)	(d)	NR	2.35E-01	NR	4.31E+00	NR	5.60E-01	NR	1.07E+01	NR	1.22E+00	NR	2.58E+01
Inorganic Mercury (Hg^{2+})		3.95E+01	3.63E+03	3.91E+01	NR	3.95E+01	3.63E+03	3.91E+01	NR	3.95E+01	3.63E+03	3.91E+01	NR
Methyl Mercury (Hg^{4+})		1.26E+01	1.87E+01	7.52E+00	7.33E+01	1.26E+01	3.62E+01	9.34E+00	1.42E+02	1.26E+01	7.68E+01	1.08E+01	3.04E+02
Nickel	(d)	1.27E+02	1.81E+02	NR	NR	1.27E+02	1.81E+02	NR	NR	1.27E+02	1.81E+02	NR	NR
Selenium	(b)	2.58E+02	NR	NR	NR	2.58E+02	NR	NR	NR	2.58E+02	NR	NR	NR
Zinc	(b)	3.86E+03	3.63E+07	NR	NR	3.86E+03	3.63E+07	NR	NR	3.86E+03	3.63E+07	NR	NR
Cyanide (free)		1.37E+00	1.37E+04	1.37E+00	NR	1.37E+00	1.37E+04	1.37E+00	NR	1.37E+00	1.37E+04	1.37E+00	NR
Volatile Organic Compounds													
Benzene	(a)	2.62E-01	9.01E-01	2.03E-01	1.22E+03	5.39E-01	1.68E+00	4.08E-01	2.26E+03	1.16E+00	3.48E+00	8.72E-01	4.71E+03
Toluene		1.53E+02	9.08E+02	1.31E+02	8.69E+02	3.49E+02	2.00E+03	2.97E+02	1.92E+03	7.95E+02	4.55E+03	6.77E+02	4.36E+03
Ethylbenzene		1.10E+02	8.34E+01	4.74E+01	5.18E+02	2.61E+02	1.96E+02	1.12E+02	1.22E+03	6.00E+02	4.58E+02	2.60E+02	2.84E+03
Xylene - m		2.10E+02	8.25E+01	5.92E+01	6.25E+02	5.01E+02	1.95E+02	1.40E+02	1.47E+03	1.15E+03	4.56E+02	3.27E+02	3.46E+03
Xylene - o		1.92E+02	8.87E+01	6.07E+01	4.78E+02	4.56E+02	2.08E+02	1.43E+02	1.12E+03	1.05E+03	4.86E+02	3.32E+02	2.62E+03
Xylene - p		1.98E+02	7.93E+01	5.66E+01	5.76E+02	4.70E+02	1.86E+02	1.33E+02	1.35E+03	1.08E+03	4.36E+02	3.10E+02	3.17E+03
Total xylene		1.92E+02	7.93E+01	5.66E+01	6.25E+02	4.56E+02	1.86E+02	1.33E+02	1.47E+03	1.05E+03	4.36E+02	3.10E+02	3.46E+03
Methyl tertiary-Butyl ether (MTBE)		1.54E+02	1.04E+02	6.22E+01	2.04E+04	2.97E+02	1.69E+02	1.08E+02	3.31E+04	6.03E+02	3.21E+02	2.10E+02	6.27E+04
Trichloroethene		2.83E-01	1.72E-02	1.62E-02	1.54E+03	6.26E-01	3.59E-02	3.40E-02	3.22E+03	1.41E+00	7.98E-02	7.55E-02	7.14E+03
Tetrachloroethene		4.49E+00	1.79E-01	1.76E-01	4.24E+02	1.04E+01	4.02E-01	3.94E-01	9.51E+02	2.38E+01	9.21E-01	9.04E-01	2.18E+03
1,1,1-Trichloroethane		3.33E+02	9.01E+00	8.77E+00	1.43E+03	7.26E+02	1.84E+01	1.80E+01	2.92E+03	1.62E+03	4.04E+01	3.94E+01	6.39E+03
1,1,1,2 Tetrachloroethane		5.39E+00	1.54E+00	1.20E+00	2.60E+03	1.27E+01	3.56E+00	2.78E+00	6.02E+03	2.92E+01	8.29E+00	6.46E+00	1.40E+04
1,1,2,2-Tetrachloroethane		2.81E+00	3.92E+00	1.64E+00	2.67E+03	6.10E+00	8.04E+00	3.47E+00	5.46E+03	1.36E+01	1.76E+01	7.67E+00	1.20E+04
Carbon Tetrachloride		3.10E+00	2.58E-02	2.57E-02	1.52E+03	7.11E+00	5.65E-02	5.62E-02	3.32E+03	1.62E+01	1.28E-01	1.27E-01	7.54E+03
1,2-Dichloroethane		3.17E-02	9.20E-03	7.13E-03	3.41E+03	5.73E-02	1.33E-02	1.08E-02	4.91E+03	1.09E-01	2.28E-02	1.88E-02	8.43E+03
Vinyl Chloride		3.82E-03	7.73E-04	6.43E-04	1.36E+03	6.87E-03	1.00E-03	8.73E-04	1.76E+03	1.25E-02	1.53E-03	1.36E-03	2.69E+03
1,2,4-Trimethylbenzene		NR	1.76E+00	NR	4.74E+02	NR	4.26E+00	NR	1.16E+03	NR	9.72E+00	NR	2.76E+03
1,3,5-Trimethylbenzene	(e)	NR	NR	NR	2.30E+02	NR	NR	NR	5.52E+02	NR	NR	NR	1.30E+03
Semi-Volatile Organic Compounds													
Acenaphthene		2.27E+02	4.86E+04	2.26E+02	5.70E+01	5.41E+02	1.18E+05	5.38E+02	1.41E+02	1.18E+03	2.68E+05	1.17E+03	3.36E+02
Acenaphthylene		1.85E+02	4.59E+04	1.84E+02	8.61E+01	4.42E+02	1.11E+05	4.40E+02	2.12E+02	9.78E+02	2.53E+05	9.74E+02	5.06E+02
Anthracene		2.43E+03	1.53E+05	2.39E+03	1.17E+00	5.53E+03	3.77E+05	5.45E+03	2.91E+00	1.10E+04	8.76E+05	1.09E+04	6.96E+00
Benzo(a)anthracene		1.01E+01	2.47E+01	7.18E+00	1.71E+00	1.42E+01	4.37E+01	1.07E+01	4.28E+00	1.69E+01	6.26E+01	1.33E+01	1.03E+01
Benzo(a)pyrene	(a)	4.96E+00	3.51E+01	NR	9.11E-01	4.96E+00	3.77E+01	NR	2.28E+00	4.96E+00	3.89E+01	NR	5.46E+00
Benzo(b)fluoranthene		2.96E+00	1.93E+01	2.56E+00	1.22E+00	3.89E+00	2.13E+01	3.29E+00	3.04E+00	4.43E+00	2.22E+01	3.69E+00	7.29E+00
Benzo(g,h,i)perylene		3.77E+02	1.87E+03	3.14E+02	1.54E-02	4.09E+02	1.94E+03	3.38E+02	3.85E-02	4.23E+02	1.97E+03	3.48E+02	9.23E-02
Benzo(k)fluoranthene		8.92E+01	5.41E+02	7.66E+01	6.87E-01	1.10E+02	5.76E+02	9.22E+01	1.72E+00	1.21E+02	5.91E+02	1.00E+02	4.12E+00
Chrysene		1.66E+01	1.19E+02	1.46E+01	4.40E-01	2.54E+01	1.49E+02	2.17E+01	1.10E+00	3.19E+01	1.66E+02	2.67E+01	2.64E+00
Dibenzo(a,h)anthracene		2.90E-01	1.45E+00	2.41E-01	3.93E-03	3.43E-01	1.64E+00	2.84E-01	9.82E-03	3.69E-01	1.74E+00	3.04E-01	2.36E-02
Fluoranthene		2.87E+02	3.83E+04	2.85E+02	1.89E+01	5.63E+02	8.87E+04	5.60E+02	4.73E+01	9.00E+02	1.83E+05	8.96E+02	1.13E+02
Fluorene		1.77E+02	6.20E+03	1.72E+02	3.09E+01	4.19E+02	1.53E+04	4.07E+02	7.65E+01	8.98E+02	3.62E+04	8.77E+02	1.83E+02
Indeno(1,2,3-cd)pyrene		3.09E+01	2.12E+02	2.70E+01	6.13E-02	4.22E+01	2.38E+02	3.59E+01	1.53E-01	4.92E+01	2.50E+02	4.11E+01	3.68E-01
Naphthalene		2.78E+01	2.33E+01	1.27E+01	7.64E+01	6.66E+01	5.58E+01	3.04E+01	1.83E+02	1.53E+02	1.31E+02	7.06E+01	4.32E+02
Phenanthrene		9.85E+01	7.17E+03	9.72E+01	3.60E+01	2.24E+02	1.76E+04	2.22E+02	8.96E+01	4.48E+02	4.07E+04	4.43E+02	2.14E+02
Pyrene		6.25E+02	8.79E+04	6.20E+02	2.20E+00	1.25E+03	2.04E+05	1.24E+03	5.49E+00	2.05E+03	4.23E+05	2.04E+03	1.32E+01
Phenol		1.60E+02	4.58E+02	1.20E+02	2.42E+04	2.96E+02	6.95E+02	2.09E+02	3.81E+04	5.86E+02	1.19E+03	3.93E+02	7.03E+04

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 4

Human Health Generic Assessment Criteria by Pathway for Residential With Home-Grown Produce Scenario

Compound	Notes	SAC Appropriate to Pathway SOM 1% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 2.5% (mg/kg)			Soil Saturation Limit (mg/kg)	SAC Appropriate to Pathway SOM 6% (mg/kg)			Soil Saturation Limit (mg/kg)
		Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Total Petroleum Hydrocarbons													
Aliphatic hydrocarbons EC_5-EC_6		4.99E+03	4.24E+01	4.23E+01	3.04E+02	1.13E+04	7.79E+01	7.78E+01	5.58E+02	2.50E+04	1.61E+02	1.60E+02	1.15E+03
Aliphatic hydrocarbons >EC_6-EC_8		1.49E+04	1.04E+02	1.03E+02	1.44E+02	3.43E+04	2.31E+02	2.31E+02	3.22E+02	7.11E+04	5.29E+02	5.28E+02	7.36E+02
Aliphatic hydrocarbons >EC_8-EC_{10}		1.61E+03	2.68E+01	2.67E+01	7.77E+01	2.91E+03	6.55E+01	6.51E+01	1.90E+02	4.26E+03	1.56E+02	1.54E+02	4.51E+02
Aliphatic hydrocarbons >EC_{10}-EC_{12}		4.57E+03	1.33E+02	1.32E+02	4.75E+01	5.51E+03	3.31E+02	3.26E+02	1.18E+02	5.98E+03	7.93E+02	7.65E+02	2.83E+02
Aliphatic hydrocarbons >EC_{12}-EC_{16}		6.27E+03	1.11E+03	1.06E+03	2.37E+01	6.34E+03	2.78E+03	2.41E+03	5.91E+01	6.36E+03	6.67E+03	4.34E+03	1.42E+02
Aliphatic hydrocarbons >EC_{16}-EC_{35}	(b)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC_{35}-EC_{44}	(b)	6.46E+04	NR	NR	8.48E+00	9.17E+04	NR	NR	2.12E+01	1.10E+05	NR	NR	5.09E+01
Aromatic hydrocarbons >EC_8-EC_9 (styrene)		1.08E+01	5.22E+02	1.06E+01	6.26E+02	2.53E+01	1.20E+03	2.48E+01	1.44E+03	5.81E+01	2.79E+03	5.69E+01	3.35E+03
Aromatic hydrocarbons >EC_9-EC_{10}		5.76E+01	4.74E+01	3.45E+01	6.13E+02	1.38E+02	1.16E+02	8.38E+01	1.50E+03	3.07E+02	2.77E+02	1.94E+02	3.58E+02
Aromatic hydrocarbons >EC_{10}-EC_{12}		8.29E+01	2.58E+02	7.52E+01	3.64E+02	1.96E+02	6.39E+02	1.79E+02	8.99E+02	4.25E+02	1.52E+03	3.91E+02	2.15E+03
Aromatic hydrocarbons >EC_{12}-EC_{16}		1.47E+02	2.85E+03	1.45E+02	1.69E+02	3.36E+02	7.07E+03	3.32E+02	4.19E+02	6.81E+02	1.68E+04	6.74E+02	1.00E+03
Aromatic hydrocarbons >EC_{16}-EC_{21}	(b)	2.63E+02	NR	NR	5.37E+01	5.45E+02	NR	NR	1.34E+02	9.34E+02	NR	NR	3.21E+02
Aromatic hydrocarbons >EC_{21}-EC_{35}	(b)	1.09E+03	NR	NR	4.83E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01
Aromatic hydrocarbons >EC_{35}-EC_{44}	(b)	1.09E+03	NR	NR	4.83E+00	1.47E+03	NR	NR	1.21E+01	1.70E+03	NR	NR	2.90E+01

Notes:

EC - equivalent carbon. SAC - soil assessment criteria.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

Calculated SAC exceeds soil saturation limit and may significantly affect the interpretation of any exceedances as the contribution of the indoor and outdoor vapour pathway to total exposure is >10%.

Calculated SAC exceeds soil saturation limit but the exceedance will not affect the SAC significantly as the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.

Calculated SAC does not exceed the soil saturation limit.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)

(a) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.

(b) SAC for selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - RESIDENTIAL WITH HOME-GROWN PRODUCE

Table 5
Human Health Generic Assessment Criteria for Residential with home-grown produce

Compound	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals			
Arsenic	37	37	37
Cadmium	22	22	22
Chromium (III) - trivalent	910	910	910
Chromium (VI) - hexavalent	21	21	21
Copper	2,500	2,500	2,500
Lead	200	200	200
Elemental Mercury (Hg^0)	0.2	0.6	1.2
Inorganic Mercury (Hg^{2+})	39	39	39
Methyl Mercury (Hg^{4+})	10	10	10
Nickel	130	130	130
Selenium	258	258	258
Zinc	3,900	3,900	3,900
Cyanide (free)	1.4	1.4	1.4
Volatile Organic Compounds			
Benzene	0.20	0.41	0.87
Toluene	130	300	680
Ethylbenzene	50	110	260
Xylene - m	59	140	327
Xylene - o	61	143	332
Xylene - p	57	133	310
Total xylene	57	133	310
Methyl tertiary-Butyl ether (MTBE)	60	110	210
Trichloroethene	0.02	0.03	0.08
Tetrachloroethene	0.2	0.4	0.9
1,1,1-Trichloroethane	9	18	39
1,1,1,2 Tetrachloroethane	1.2	2.8	6.5
1,1,2,2-Tetrachloroethane	1.6	3.5	7.7
Carbon Tetrachloride	0.026	0.056	0.127
1,2-Dichloroethane	0.007	0.011	0.019
Vinyl Chloride	0.0006	0.0009	0.0014
1,2,4-Trimethylbenzene	1.8	4.3	9.7
1,3,5-Trimethylbenzene	NR	NR	NR
Semi-Volatile Organic Compounds			
Acenaphthene	230	540	1,170
Acenaphthylene	180	440	970
Anthracene	2,400	5,500	10,900
Benzo(a)anthracene	7	11	13
Benzo(a)pyrene	5	5	5
Benzo(b)fluoranthene	2.6	3.3	3.7
Benzo(g,h,i)perylene	310	340	350
Benzo(k)fluoranthene	77	92	100
Chrysene	15	22	27
Dibenzo(a,h)anthracene	0.24	0.28	0.30
Fluoranthene	290	560	900
Fluorene	170	410	880
Indeno(1,2,3-cd)pyrene	27	36	41
Naphthalene	13	30	71
Phenanthrene	100	220	440
Pyrene	620	1,240	2,040
Phenol	120	210	390
Total Petroleum Hydrocarbons			
Aliphatic hydrocarbons EC_5-EC_6	42	78	160
Aliphatic hydrocarbons >EC_6-EC_8	100	230	530
Aliphatic hydrocarbons >EC_8-EC_{10}	27	65	154
Aliphatic hydrocarbons >EC_{10}-EC_{12}	130 (48)	330 (118)	760 (283)
Aliphatic hydrocarbons >EC_{12}-EC_{16}	1,100 (24)	2,400 (59)	4,300 (142)
Aliphatic hydrocarbons >EC_{16}-EC_{35}	65,000 (8)	92,000 (21)	110,000
Aliphatic hydrocarbons >EC_{35}-EC_{44}	65,000 (8)	92,000 (21)	110,000
Aromatic hydrocarbons >EC_8-EC_9 (styrene)	11	25	57
Aromatic hydrocarbons >EC_9-EC_{10}	30	80	190
Aromatic hydrocarbons >EC_{10}-EC_{12}	80	180	390
Aromatic hydrocarbons >EC_{12}-EC_{16}	140	330	670
Aromatic hydrocarbons >EC_{16}-EC_{21}	260	540	930
Aromatic hydrocarbons >EC_{21}-EC_{35}	1,100	1,500	1,700
Aromatic hydrocarbons >EC_{35}-EC_{44}	1,100	1,500	1,700
Minerals			
Asbestos	No asbestos detected with ID or <0.001% dry weight[1]		

Notes:

'-' Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used

EC - equivalent carbon. SAC - soil assessment criteria.

[1] LOD for weight of asbestos per unit weight of soil calculated on a dry weight basis using PLM, handpicking and gravimetry.

The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoo air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3.

(VALUE IN BRACKETS)

RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.

GENERIC ASSESSMENT CRITERIA FOR CONTROLLED WATERS

Protection of the water environment

The water environment in the United Kingdom is protected under a number of regulatory regimes. The relevant environmental regulator is consulted where there may be a risk that pollution of 'controlled waters' may occur or may have occurred in the past.

The term 'controlled waters' refers to coastal waters, inland freshwaters and groundwater. The EU Water Framework Directive (WFD) (2000/60/EC) is implemented via domestic regulations and guidance, covering aspects of groundwater and surface water protection as well as drinking water supply policy. Domestic legislation and guidance will vary across the United Kingdom. Therefore, the relevant legislation for England, Wales, Northern Ireland and Scotland should be reviewed, alongside guidance provided by the Environment Agency (EA), Natural Resource Wales (NRW), the Scottish Environmental Protection Agency (SEPA) or the Northern Ireland Environment Agency (NIEA), as appropriate.

The main objectives of the protection and remediation of groundwater under threat from land contamination are set out within "The Environment Agency's approach to groundwater protection", version 1.0 (March 2017)[(1)] and the associated guidance "Land contamination groundwater compliance points: quantitative risk assessments (March 2017)[(1a)] that have replaced the previous guidance document "Groundwater Principles and Practice (GP3)". When assessing risks to groundwater, the following need to be considered:

- Where pollutants have not yet entered groundwater, all necessary and reasonable measures must be taken to:
    - ***prevent*** *the input of* ***hazardous*** *substances into groundwater (see description of hazardous substances below)*
    - ***limit*** *the entry of other (non-hazardous) pollutants into groundwater to avoid pollution, deterioration in the status of groundwater bodies and to prevent sustained, upward trends in pollutant concentrations in groundwater.*
- Where pollutants have already entered groundwater, the priority is to take all necessary and reasonable measures to:
    - ***minimise*** *further entry of "contaminants" where there is a defined source*
    - ***limit the pollution*** *of groundwater or any effect on the status of the groundwater body from the future expansion of the 'plume', if necessary, by actively reducing its extent.*

Within the context of groundwater risk assessments on sites affected by land contamination, "reasonable" means feasible without involving disproportionate costs. What costs are "disproportionate" depends on site-specific circumstances, which may include:

- Considerations of technical feasibility such as identified by the remedial options appraisal, this may be due to the distribution or nature of the contamination and the available remedial methods to treat the identified contamination;
- Sustainability considerations.

DEFINITIONS AND SUBSTANCE CLASSIFICATIONS

Risks to surface waters:

When assessing risks to surface waters, the following list of definitions should be understood:

Priority substances (PS) are harmful substances originally identified under the Water Framework Directive (WFD) 2000/60/EC as substances 'presenting a significant risk to or via the aquatic environment' at a European level. Member States are required to incorporate the identified **PS** into their country-wide monitoring programmes. There are currently 33 **PS** defined within the Priority Substances Directive (2013/39/EU; Annex 1), with a further 12 additional substances due to come into force from 22 December 2018. Directive 2013/39/EU has been transposed into domestic legislation for England and Wales by The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

Under the umbrella of **PS**, there is a sub-set of substances identified as being "hazardous", and these are referred to as **Priority hazardous substances (PHS).** The list of **PHS** is defined at EU level within the Priority Substances Directive (2013/39/EU). The WFD defines hazardous substances as 'substances (or groups of substances) that are toxic, persistent and liable to bio-accumulate, and other substances or groups of substances that give rise to an equivalent level of concern.' There are currently 15 **PHS**, with a further 6 additional substances due to come into force from 22 December 2018.

There is also another group of substances defined at EU level and which are referred to as **other pollutants (OP)** in Directive 2013/39/EU**.** These are additional substances which although not **priority substances**, have EQS which are identical to those laid down in the legislation which applied prior to 13 January 2009 (Directive 2008/105/EU). The **OP** are listed along with the **priority substance (PS)** within the Priority Substances Directive (2013/39/EU),and their associated EQS are also listed therein. There are 6 **OP** defined within the Priority Substances Directive (2013/39/EU).

In addition to the EU level substances, there are also a group of pollutants defined at a Member State level, referred to as **Specific pollutants (SP)**. These substances are pollutants which are released in significant quantities into water bodies in each of the individual European Member States. Under the WFD, Member States are required to set their own EQS for these substances. An indicative list of **SP** is given in Annex VIII of the WFD. Many of the substances categorised as **SP** in the UK were formerly List 2 substances under the old Groundwater Directive (80/68/EEC). The **SP** are defined within Part 2 (Table 1) of The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

Risks to groundwater:

When assessing risks to groundwater, the following definitions should be understood:

Under the requirements of the Groundwater Daughter Directive (2006/118/EU), the UK has published a list of substances it considers to be **hazardous substances** with respect to groundwater. In their advisory capacity to the government, this list has been derived by the UK Joint Agencies Groundwater Directive Advisory Group (JAGDAG), of which the Environment Agency is a member. The JAGDAG list of **hazardous substances** was published in January 2017 and the Environment Agency will use the updated list of hazardous substances from this date for all new activities that may lead to the discharge of hazardous substances to groundwater. The list is extensive and can be found in full at:

[redacted]

Selecting the appropriate assessment criteria

When assessing the risks to controlled waters, various assessment criteria apply, depending on the nature of the assessment and the conceptual site model.

Where a surface water body is involved, then Environmental Quality Standards (EQS) are the relevant assessment criteria as they are designed to be protective of surface water ecology.

Where a public water supply or a Principal aquifer is involved, then the standards defined in The Water Supply (Water Quality) Regulations(2) are the primary source of assessment criteria. The Private Water Supplies Regulations(3) may also be applicable in some cases. For instances where there are no UK assessment criteria, then the World Health Organisation (WHO) drinking water guidelines(4) may be used.

This appendix presents the generic assessment criteria (GAC) that RSK considers suitable for assessing risks to controlled waters for our most commonly encountered determinants. A full list of EQS for England and Wales are included in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

The RSK GAC for controlled waters are presented in **Table 1** and **Table 2**. In line with the Environment Agency's Remedial Targets Methodology, the GAC for controlled waters are termed 'target concentrations'.

The appropriate target concentrations should be selected with consideration to:

- the site conceptual model (i.e. the receptor at potential risk);
- whether the substance is already present in groundwater at the site;
- whether or not the substance is classified as a priority hazardous substance under the Priority Substances Directive (2013/39/EC) (see above), or as a hazardous substance according to the current list of JAGDAG determinations(5); and
- background concentrations in the aquifer (if applicable).

It is important to remember that the WFD and Environment Agency guidance(1 & 1a) support a sustainable, risk-based approach be applied to groundwater contamination. Exceedance of any target concentration does not necessarily imply that an unacceptable risk exists or that remediation is inevitably required.

Target concentrations shaded in green are statutory values	Target concentrations shaded in orange are non-statutory values

Note: Units µg/l throughout (unless otherwise stated)

Table 1: Target concentrations for controlled waters (excluding TPH CWG fractions)

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
Metals & other inorganics						
Hazardous substance	Specific pollutant	Arsenic	-	10[2]	50[6a]	25[6a]
Non-hazardous pollutant	Priority substance	Cadmium	0.1[7]	5[2]	≤0.08, 0.08, 0.09, 0.15, 0.25 [6b]	0.2[6a]
(Not determined)	-	Chromium (total)	-	50[2]	Sum values for chromium III and VI	
(None	Specific pollutant	Chromium (III)	-	Use value for total chromium	4.7[6a]	-
Hazardous substance	Specific pollutant	Chromium (VI)			3.4[6a]	0.6[6a]

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
(Not determined)	Specific pollutant	Copper	-	2,000[2]	1 bioavailable[6a]	3.76 dissolved, where DOC ≤1mg/l[6a]
						3.76µg/l + (2.677µg/l x ((DOC/2) – 0.5µg/l)) dissolved, where DOC >1mg/l[6a]
Hazardous substance	Priority substance	Lead	-	10[2]	1.2 bioavailable[6a]	1.3[6a]
Hazardous substance	**Priority hazardous substance**	Mercury	0.01[7]	1[2]	0.07[6c]	0.07[6c]
Non-hazardous pollutant	Priority substance	Nickel	-	20[2]	4.0 bioavailable[6a]	8.6[6a]
Non-hazardous pollutant	-	Selenium	-	10[2]	-	-
Non-hazardous pollutant	Specific pollutant	Zinc	-	3,000[8]	10.9 bioavailable[6a]	6.8 dissolved [6a]
None	Specific pollutant	Iron	-	200[2]	1000[6a]*1	1000[6a])*1
None	Specific pollutant	Manganese	-	50[2] (0.05mg/l)	123 bioavailable[6a] (0.123mg/l)	-
(Not determined)	-	Aluminium	-	200[2]	-	-

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
Hazardous substance	**Priority hazardous substance**	Tributyltin compounds (Tributyltin-cation)	0.001[7]	-	0.0002[6a]	0.0002[6a]
(Not determined)	-	Sodium	-	200,000[2] (200 mg/l)	-	-
Non-hazardous pollutant	Specific pollutant	Cyanide (Hydrogen cyanide)	-	50[2] (0.05 mg/l)	1[6a] (0.001 mg/l)	1[6a] (0.001 mg/l)
Non-hazardous pollutant	-	Total ammonia[$] (ammonium (as NH_4^+) plus ammonia (NH_3)	-	500[2] (0.5 mg/l)	300[6f] (0.3 mg/l)	-
Non-hazardous pollutant	Specific pollutant	Ammonia un-ionised (NH_3)	-	-	-	21[6a] (0.021 mg/l)
Non-hazardous pollutant	Specific pollutant	Chlorine	-	-	2[6a] (0.002 mg/l)	10[6d] (0.01 mg/l)
(Not determined)	-	Chloride	-	250,000[2] (250 mg/l)	-	-
(Not determined)	-	Sulphate	-	250,000[2] (250 mg/l)	-	-
(Not determined)	-	Nitrate (as NO_3)	-	50,000[2] (50 mg/l)	-	-
(Not determined)	-	Nitrite (as NO_2)	-	500[2] (0.5 mg/l)	10[9] (0.01 mg/l)	-
Volatile organic compounds (VOC)						

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
Non-hazardous pollutant	Other pollutant	Tetrachloroethene (tetrachloroethylene)	0.1[7]	10[2]	10[6a]	10[6a]
Hazardous substance	Other pollutant	Trichloroethene (trichloroethylene)	0.1[7]	10[2]	10[6a]	10[6a]
None	Specific pollutant	Tetrachloroethane	-	-	140[6a]	-
Hazardous substance	Other pollutant	Carbon tetrachloride (tetrachloromethane)	0.1[7]	3.0[2]	12[6a]	12[6a]
Non-hazardous pollutant	Priority substance	1,2-Dichloroethane	1.0[7]	3.0[2]	10[6a]	10[6a]
Hazardous substance	**-**	Vinyl chloride (chloroethene)	-	0.5[2]	-	-
Non-hazardous pollutant	Priority substance	Dichloromethane	-	20[4]	20[6a]	20[6a]
Non-hazardous pollutant	Priority substance	Trichlorobenzenes	0.01[7]	-	0.4[6a]	0.4[(6a)]
(Not determined)	-	Trihalomethanes	-	100[2a]	-	-
Hazardous substance	Priority substance	Trichloromethane (Chloroform)	0.1[7]	(see "Trihalomethanes"above)	2.5[6a]	2.5[6a]
Non-hazardous pollutant	**Priority hazardous substance**	Di(2-ethylhexyl) phthalate (bis(2-ethylhexyl) phthalate, DEHP)	-	8[4]	1.3[6a]	1.3[6a]

Substance classification		Determinant	Target concentrations (µg/l)			
			Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
Groundwater receptors[5]	Surface water receptors[6]				Freshwater	Transitional (estuaries) and coastal waters
None	Specific pollutant	Benzyl butyl phthalate	-	-	7.5[6a]	0.75[6e]
Hazardous substance	**Priority hazardous substance**	Hexachlorobutadiene	0.005[7]	0.6[4]	0.6[6c]	0.6[6c]
Semi-volatile organic compounds (SVOC)						
(Not determined)	-	Acenaphthylene (C12-C16)	-	-	5.8[10]	
Hazardous substance	**Priority hazardous substance**	Anthracene (C16-C35)	-	-	0.1[6a]	0.1[6a]
Non-hazardous pollutant	Priority substance	Naphthalene (C10-C12)	-	-	2[6a]	2[6a]
Hazardous substance	Priority substance	Fluoranthene (C16-C35)	-	-	0.0063[6a]	0.0063[6a]
Hazardous substance(s)	**Priority hazardous substance(s)**	Benzo(a)pyrene (C16-C35)	-	0.01[2]	0.00017[6a]	0.00017[6a]
		Benzo(b)fluoranthene (C16-C35)	-	0.1[2] sum of the concentration of the four specified compounds	No EQS for these substances. B(a)P should be used as the indicator compound instead.	
		Benzo(k)fluoranthene (C16-C35)	-			

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
		Benzo(g,h,i)perylene (C16-C35)	-			
		Indeno(1,2,3-cd) pyrene (C16-C35)	-			
Non-hazardous pollutant	Specific pollutant	Phenol		-	7.7[6a]	7.7[6a]
Hazardous substance	Specific pollutant	2,4-Dichlorophenol	0.1[7]	-	4.2[6a]	0.42[6a]
Hazardous substance	Priority substance	Pentachloro-phenol (PCP)	0.1[7]	9[4]	0.4[6a]	0.4[6a]
Petroleum hydrocarbons						
Hazardous substance	-	Total petroleum hydrocarbons	-	See Table 2 for individual (non-statutory) TPH CWG fractions with respect to drinking water receptors	See individual risk driving compounds (i.e. BTEX and PAH) for specific EQS	
Hazardous substance	Priority substance	Benzene	1[7]	1[2]	10[6a]	8[6a]
Hazardous substance	Specific pollutant	Toluene	4[7]	700[4]	74[6a]	74[6a]
Hazardous substance	-	Ethylbenzene	-	300[4]	-	-
(Not determined)	-	Xylenes	3[7]	500[4]	30[11]	-

Substance classification		Determinant	Target concentrations (µg/l)			
			Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
Groundwater receptors[5]	Surface water receptors[6]				Freshwater	Transitional (estuaries) and coastal waters
Non-hazardous pollutant	-	Methyl tertiary butyl ether (MTBE)	-	15[12]	-	
Pesticides, fungicides, insecticides and herbicides						
Hazardous substance(s)	Other pollutant (Cyclodiene pesticides)	Aldrin	0.003[7]	0.03[2]	0.01[6a]	0.005[6a]
		Dieldrin	0.003[7]	0.03[2]		
		Endrin	0.003[7]	0.1[2b]		
		Isodrin*2	0.003[7]	0.1[2b]		
Hazardous substance	Other pollutant	DDT (total)	0.002[7]	1[4]	0.025[6a]	0.025[6a]
(Not determined) – assume to be Hazardous Substance	-	Total pesticides	-	0.5[2]	-	-
(Not determined) - assume to be Hazardous Substance	-	Other individual pesticides	-	0.1[2]		

Substance classification		Determinant	Target concentrations (µg/l)			
			Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
Groundwater receptors[5]	Surface water receptors[6]				Freshwater	Transitional (estuaries) and coastal waters
Hazardous substance	Specific pollutant	Carbendazim	-	-	0.15[6a]	-
Hazardous substance	Specific pollutant	Chlorothalonil	-	-	0.035[6a]	-
Hazardous substance	Specific pollutant (until 22/12/18, after which it becomes a Priority substance)	Cypermethrin	-	-	0.0001[6a] From 22/12/18: 8.0E-5[6a]	0.0001[6a] From 22/12/18: 8.0E-6[6a]
Hazardous substance	Specific pollutant	Dimethoate	0.01[7]	-	0.48[6a]	0.48[6a]
(Not determined)	Specific pollutant	Glyphosate	-	-	196[6a]	196[6a]
Hazardous substance	Specific pollutant	Linuron		-	0.5[6a]	0.5[6a]
Non-hazardous pollutant	Specific pollutant	Mecoprop	0.04[7]	-	18[6a]	18[6a]
Non-hazardous pollutant	Specific pollutant	Methiocarb	-	-	0.01[6a]	-
Non-hazardous pollutant	Specific pollutant	Pendimethalin	-	20[4]	0.3[6a]	-

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
Hazardous substance	Specific pollutant	Permethrin	0.001[7]	-	0.001[6a]	0.0002[6a]
Hazardous substance	Priority substance	Alachlor	-	20[4]	0.3[6a]	0.3[6a]
Hazardous substance	Priority substance	Atrazine	0.03[7]	100[4]	0.6[6a]	0.6[6a]
Hazardous substance	Priority substance	Diuron	-	-	0.2[6a]	0.2[6a]
Hazardous substance	**Priority hazardous substance**	Endosulphan	0.005[7]	-	0.005[6a]	0.0005[6a]
Non-hazardous pollutant	Priority substance	Isoproturon	-	9[4]	0.3[6a]	0.3[6a]
Hazardous substance	Priority substance	Simazine	0.03[7]	2[4]	1[6a]	1 [6a]
Hazardous substance	**Priority hazardous substance**	Trifluralin	0.01[7]	20[4]	0.03[6a]	0.03[6a]
(Not determined)	From 22/12/18: Priority substance	Dichlorovos	-	-	From 22/12/18: 6.0E-4[6a]	From 22/12/18: 6.0E-5[6a]
Hazardous substance	From 22/12/18: Priority substance	Heptachlor and heptachlor epoxide	-	0.03[2]	From 22/12/18: 2.0E-7[6a]	From 22/12/18: 1.0E-08[6a]
Miscellaneous						

Substance classification		Determinant	Target concentrations (µg/l)			
Groundwater receptors[5]	Surface water receptors[6]		Minimum reporting value	UK drinking water standard (or best equivalent)	EQS or best equivalent	
					Freshwater	Transitional (estuaries) and coastal waters
None	Specific pollutant	Triclosan (antibacterial agent)	-	-	0.1[6a]	0.1[6a]
Hazardous substance	**From 22/12/18: Priority hazardous substance**	Perfluoro-octane sulfonic acid (and its derivatives) (PFOS)	-	-	From 22/12/18: 6.5E-4[6a]	From 22/12/18: 1.3E-4[6a]
Hazardous substance	**From 22/12/18: Priority hazardous substance**	Hexabromo cyclododecane (HBCDD)	-	-	From 22/12/18: 0.0016[6a]	From 22/12/18: 0.0016[6a]

Notes:

'-' A target concentration is not available.

$Please note that total ammonia (NH_4^+ and NH_3) is equivalent to ammoniacal nitrogen in laboratory reports

*1 Please note that although iron is listed in the 2015 Direction as 1.000 µg/l, the EQS remains at 1mg/l in Scotland and it is assumed this is an error and should read either 1,000 or 1000µg/l.

*2 Please note that although Isodrin is not listed in name within the group of "Cyclodiene pesticides" in Table 1 of Schedule 3 Part 3 of the 2015 Direction[6], the CAS number for Isodrin (465-73-6) **is** listed and therefore it is assumed that it has been missed off the named list of substances.

*3 Total petroleum hydrocarbons is used for consistency, but is an analytical method-defined measurement for a mixture of hydrocarbons subject to environmental analysis[11].

"Bioavailable" in relation to copper, zinc, nickel and manganese (but not lead) is the generic EQSbioavailable[6a] derived from the Metal Bioavailability Assessment Tool (M-BAT) developed by the Water Framework Directive UK Technical Advisory Group (WFDTAG). Exceedance of this value should prompt a site-specific assessment using the M-BAT with pH, DOC and Ca to derive a site-specific EQS termed the $PNEC_{dissolved}$. [redacted]t.

For zinc, if there is an exceedance of the EQSbioavailable in an initial GQRA, Tier 2 required that the EQS for zinc should also have the ambient background concentration of zinc added as well

Table 2: World Health Organization (WHO) guide values for TPH CWG fractions in drinking water[13] (as referenced in CL:AIRE, 2017[11])

TPH CWG fraction	WHO guide value for drinking water[13] (µg/l)
Aliphatic fractions:	
Aliphatic EC5-EC6	15,000
Aliphatic >EC6-EC8	15,000
Aliphatic >EC8-EC10	300
Aliphatic >EC10-EC12	300
Aliphatic >EC12-EC16	300
Aliphatic >EC16-EC21	-
Aliphatic >EC21-EC35	-
Aromatic fractions:	
Aromatic EC5-EC6	10 (benzene)
Aromatic >EC6-EC8	700 (toluene)
Aromatic >EC8-EC10	300 (ethyl benzene) 500 (xylenes)
Aromatic >EC10-EC12	90
Aromatic >EC12-EC16	90
Aromatic >EC16-EC21	90
Aromatic >EC21-EC35	90
Reference: World Health Organisation (WHO), 2008. Petroleum products in drinking-water. Background document for development of WHO guidelines for drinking water quality. WHO/SDE/WSH/05.08/123. World Health Organisation, Geneva[13].	

References

1. Environment Agency (2017), 'The Environment Agency's approach to groundwater protection', version 1.0, March 2017 (formerly contained within GP3) [accessed 29 March 2017]. https://www.gov.uk/government/collections/groundwater-protection

1a. Environment Agency (2017), 'Land contamination groundwater compliance points: quantitative risk assessments', March 2017 (formerly contained within GP3) [accessed 29 March 2017]. https://www.gov.uk/government/collections/groundwater-protection

2. The Water Supply (Water Quality) Regulations 2016 (SI 2016/619)
    2a. Sum of chloroform, bromoform, dibromochloromethane and bromodichloromethane
    2b. Standard applies to individual pesticides except aldrin, dieldrin, heptachlor and heptachlor epoxide, for which a separate standard is defined.
3. The Private Water Supplies (England) Regulations 2016. SI 2016 / 618
4. WHO (2011), *Guidelines for drinking-water quality*, 4th edn
5. JAGDAG hazard substance determinations: This list contains substances that are determined to be hazardous substances or non-hazardous pollutants for the purposes of the groundwater directive 2006/118/EC. The absence of an assessment or substance from the list means an assessment has not been done yet and is presented as 'Not yet determined'; if a substance has been assessed but does not fall into either category it is presented as 'None'. For further details on how substances are assessed, see the Joint Agencies Groundwater Directive Advisory Group (JAGDAG) 'Methodology for the determination of hazardous substances in groundwater for the purposes of the groundwater directive 2006/118/EC' which is available from the JAGDAG website. The methodology is a UK –wide framework that sets criteria for how to assess whether a substance is a hazardous substances in groundwater. The list of substances can be found at:

    [redacted]

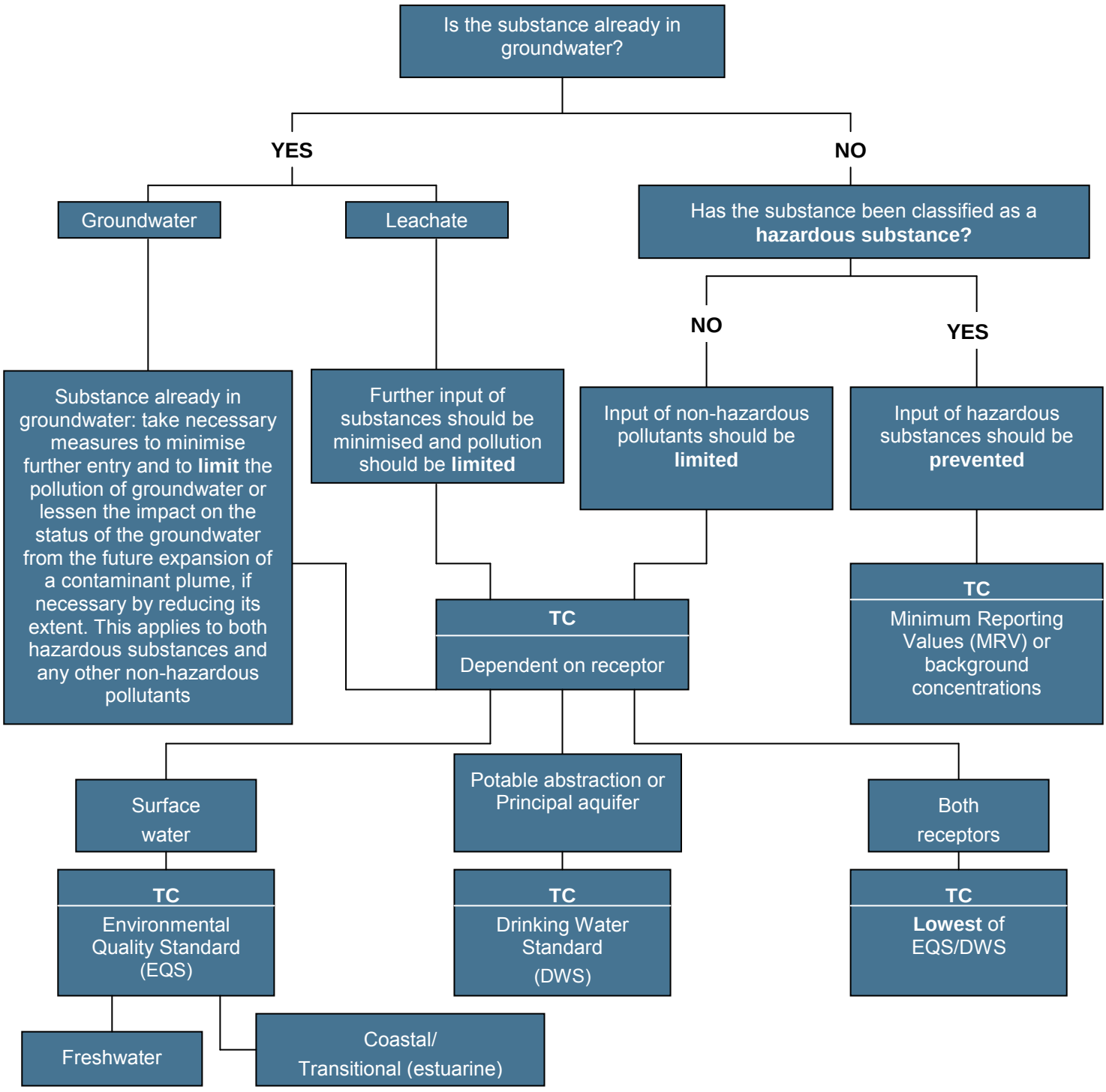
6. The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.
    6a. The EQS for these substances are based on a "long term mean" or an "annual average (AA)" EQS.
    6b. For cadmium and its compounds the EQS values vary depending on the hardness of the water as specified in five class categories (Class 1: < 40 mg CaCO3/l, Class 2: 40 to < 50 mg CaCO3/l, Class 3: 50 to < 100 mg CaCO3/l, Class 4: 100 to < 200 mg CaCO3/l and Class 5: ≥ 200 mg CaCO3/l).
    6c. The EQS for Mercury and hexachlorobutadiene are based on a "maximum acceptable concentration (MAC)" EQS in absence of an "annual average (AA)" EQS.
    6d. The EQS for chlorine in saltwater is based on the 95th percentile concentration of total residual oxidant, which refers to the sum of all oxidising agents existing in water, expressed as available chlorine.
    6e. The recommended saltwater standard is derived using a safety factor of 100. Where the standard is failed, it is recommended that supporting evidence of ecological damage should be obtained before committing to expensive action.
    6f. EQS for total ammonia is as per Schedule 3, Part 1, Table 7 of of the above directions. EQS applies to river types 1, 2 and 4 and 6 (namely upland and low alkalinity). The EQS for a lowland and high alkalinity rivers (types 3, 5 and 7) is 600µg/l (0.6mg/l).

Additional information on the Metal Bioavailability Assessment Tool (M-BAT) is available at [redacted]

7. Minimum reporting values listed at https://www.gov.uk/government/publications/values-for-groundwater-risk-assessments/hazardous-substances-to-groundwater-minimum-reporting-values (updated 13 January 2017; accessed 29 March 2017). Note target concentration for xylenes is 3 μg/l each for o-xylene and m/p xylene as it may not be possible to separate m- and p-xylene; 135 tcb, 124 tcb, 123 tcb each to 0.01 μg/l)
8. The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996 (as amended). SI 1996 / 3001
9. Council Directive on the Quality of Fresh Waters Needing Protection or Improvement in Order to Support Fish Life (Freshwater Fish Directive) (78/659/EEC)
10. WRc plc (2002), R&D Technical Report P45.
11. CL:AIRE, 2017. Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies. V1.1.
12. Drinking Water Inspectorate (London, UK). Environmental Information Request on MTBE in drinking water. Ref. DWI 1/10/18; dated 28 November 2006. Value is based on the odour threshold for MTBE, which is lower than a health-based guideline value
13. World Health Organisation (WHO), 2008. Petroleum products in drinking-water. Background document for development of WHO guidelines for drinking water quality. WHO/SDE/WSH/05.08/123. World Health Organisation, Geneva. [accessed 29 March 2017]

[redacted]

FLOW CHART TO ASSIST WITH SELECTION OF TARGET CONCENTRATIONS



TC = Target concentration

When leachate is being assessed the 'compliance point' is the groundwater body. Therefore dilution within the groundwater body may be applied with caution before comparing with the TC.

When directly assessing a receptor, e.g., a river, the appropriate TC should be selected.

GENERIC ASSESSMENT CRITERIA FOR POTABLE WATER SUPPLY PIPES

A range of pipe materials is available and careful selection, design and installation is required to ensure that water supply pipes are satisfactorily installed and meet the requirements of the Water Supply (Water Fittings) Regulations 1999 in England and Wales, the Byelaws 2000 in Scotland and the Northern Ireland Water Regulations. The regulations include a requirement to use only suitable materials when laying water pipes and laying water pipes without protection is not permitted at contaminated sites. The water supply company has a statutory duty to enforce the regulations.

Contaminants in the ground can pose a risk to human health by permeating potable water supply pipes. To fulfil their statutory obligation, UK water supply companies require robust evidence from developers to demonstrate either that the ground in which new plastic supply pipes will be laid is free from specific contaminants, or that the proposed remedial strategy will mitigate any existing risk. If these requirements cannot be demonstrated to the satisfaction of the relevant water company, it becomes necessary to specify an alternative pipe material on the whole development or in specific zones.

In 2010, UK Water Industry Research (UKWIR) published *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites* (Report Ref. No. 10/WM/03/21). This report reviewed previously published industry guidelines and threshold concentrations adopted by individual water supply companies.

The focus of the UKWIR research project was to develop clear and concise procedures, which provide consistency in the pipe selection decision process. It was intended to provide guidance that can be used to ensure compliance with current regulations and to prevent water supply pipe failing prematurely due to the presence of contamination.

The report concluded that in most circumstances only organic contaminants pose a potential risk to plastic pipe materials and Table 3.1 of the report provides threshold concentrations for polyethylene (PE) and polyvinyl chloride (PVC) pipes for the organic contaminants of concern. The report also makes recommendations for the procedures to be adopted in the design of site investigations and sampling strategies, and the assessment of data, to ensure that the ground through which water supply pipes will be laid is adequately characterised.

Risks to water supply pipes have therefore been assessed against the threshold concentrations for PE and PVC pipe specified in Table 3.1 of Report 10/WM/03/21, which have been adopted as the GAC for this linkage and are reproduced in Table A3 below.

Since water supply pipes are typically laid at a minimum depth of 0.75m below finished ground levels, sample results from depths between 0.5m and 1.5m below finished level are generally considered suitable for assessing risks to water supply. Samples outside these depths can be used, providing the stratum is the same as that in which water supply pipes are likely to be

located. The report specifies that sampling should characterise the ground conditions to a minimum of 0.5m below the proposed depth of the pipe.

It should be noted that the assessment provided in this report is a guide and the method of assessment and recommendations should be checked with the relevant water supply company.

Table A3: Generic assessment criteria for water supply pipes

		Pipe material	
		GAC (mg/kg)	
	Parameter group	**PE**	**PVC**
1	Extended VOC suite by purge and trap or head space and GC-MS with TIC (Not including compounds within group 1a)	0.5	0.125
1a	• BTEX + MTBE	0.1	0.03
2	SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C_5–C_{10}) (Not including compounds within group 2e and 2f)	2	1.4
2e	• Phenols	2	0.4
2f	• Cresols and chlorinated phenols	2	0.04
3	Mineral oil C_{11}–C_{20}	10	Suitable
4	Mineral oil C_{21}–C_{40}	500	Suitable
5	Corrosive (conductivity, redox and pH)	Suitable	Suitable
Specific suite identified as relevant following site investigation			
2a	Ethers	0.5	1
2b	Nitrobenzene	0.5	0.4
2c	Ketones	0.5	0.02
2d	Aldehydes	0.5	0.02
6	Amines	Not suitable	Suitable
Notes: where indicated as ‘suitable’, the material is considered resistant to permeation or degradation and no threshold concentration has been specified by UKWIR.			

1 RISK ASSESSMENT METHODOLOGY

Risk is a combination of the 'likelihood' of an event occurring and the magnitude of its 'consequences'. Therefore, in order to assess risk, both the likelihood and the consequences of an event must be taken into account. RSK Group Plc has adopted guidance provided in CIRIA C552 for use in the production of risk assessments.

The likelihood of an event can be classified on a four point system using the following terms and definitions based on CIRIA C552:

Highly likely: The event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;

Likely: It is probable that an event will occur, or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;

Low likelihood: Circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term;

Unlikely: Circumstances are such that it is improbable the event would occur even in the long term.

The severity can be classified using a similar system similarly based on CIRIA C552:

Severe: Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short term risk to an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);

Medium: Chronic damage to human health ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);

Mild: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures or the environment; and

Minor: Harm, not necessarily significant, but that could result in financial loss or expenditure to resolve. Non-permanent human health effects easily prevented by use of personal protective clothing. Easily repairable damage to buildings, structures and services.

Once the likelihood of an event occurring and its severity have been classified, a risk category can be assigned the table below. **RISK CLASSIFICATION SYSTEM (CIRIA 552)**

		RISK CLASSIFICATION SYSTEM (CIRIA 552)			
		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**Highly likely**	Very high	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low likelihood	Moderate	Moderate/Low	Low	Very Low
	Unlikely	Moderate/Low	Low	Very Low	Very Low

APPENDIX F - MONITORING RECORDS

(i) Gas/Groundwater Monitoring Results

IN-SITU GAS MONITORING RESULTS

[Pressures]	Previous	During	Start	End	Equipment Used & Remarks
Round 1	Falling	Constant	1007	1007	GA5000 + Dipmeter + Weather: Cloudy + Ground: Dry + Wind: Light + Air Temp: 18DegC
Round 2	Rising	Falling	1021	1021	GA5000 + Dipmeter + Weather: Sunny + Ground: Dry + Wind: Light + Air Temp: 20DegC
Round 3	Falling	Falling	1014	1014	GA5000 + Dipmeter + Weather: Cloudy + Ground: Dry + Wind: Light + Air Temp: 18DegC
Round 4	Falling	Rising	1010	1010	GA5000 + Dipmeter + Weather: Cloudy + Ground: Dry + Wind: Light + Air Temp: 25DegC

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS1	1	50	1	2.37	---	1.00 to 2.40	08/08/2017 13:46:00	1007	1007	$0.0_{(I)}$	-	-	-	-	-	-	-
WS1	1	50	1		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS1	1	50	1 (2)	2.37	---	1.00 to 2.40	08/08/2017 13:47:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.9	0.0	19.8	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.9	0.0	19.2	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	1.2	0.0	18.6	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	1.5	0.0	17.8	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	1.7	0.0	17.5	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	1.7	0.0	17.3	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.7	0.0	17.4	0.0	0	0
WS1	1	50	1 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.6	0.0	17.3	0.0	0	0
WS1	1	50	1 (3)	2.37	2.31	1.00 to 2.40	08/08/2017 13:53:00	-	-	-	1.57	-	-	-	-	-	-
WS1	1	50	2	2.37	---	1.00 to 2.40	10/08/2017 12:15:00	1021	1021	$0.0_{(I)}$	-	-	-	-	-	-	-
WS1	1	50	2		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS1	1	50	2 (2)	2.37	---	1.00 to 2.40	10/08/2017 12:16:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS1	1	50	2 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.9	0.0	17.7	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.9	0.0	17.0	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	1.1	0.0	16.4	0.0	1	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
[redacted]	05/09/17	[redacted]	24/08/17	732959

Contract: **515 Stockwood Road, Brislington**

AGS

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS1	1	50	2 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	1.2	0.0	15.9	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	1.4	0.0	15.4	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	1.4	0.0	15.3	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.4	0.0	15.2	0.0	1	0
WS1	1	50	2 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.3	0.0	15.2	0.0	0	0
WS1	1	50	2 (3)	2.37	2.40	1.00 to 2.40	10/08/2017 12:22:00	-	-	-	1.95	-	-	-	-	-	-
WS1	1	50	3	2.37	---	1.00 to 2.40	16/08/2017 12:35:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-
WS1	1	50	3		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS1	1	50	3 (2)	2.37	---	1.00 to 2.40	16/08/2017 12:36:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	1.8	0.0	18.8	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	1.8	0.0	17.9	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	2.0	0.0	17.6	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	2.1	0.0	17.3	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	2.2	0.0	17.1	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	2.2	0.0	17.1	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	2.2	0.0	17.1	0.0	0	0
WS1	1	50	3 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	2.2	0.0	17.1	0.0	0	0
WS1	1	50	3 (3)	2.37	2.31	1.00 to 2.40	16/08/2017 12:42:00	-	-	-	2.22	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
[redacted]	05/09/17	[redacted]	24/08/17	732959

Contract: **515 Stockwood Road, Brislington**

AGS

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS1	1	50	4	2.37	---	1.00 to 2.40	23/08/2017 12:55:00	1010	1010	$0.0_{(I)}$	-	-	-	-	-	-	-
WS1	1	50	4		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS1	1	50	4 (2)	2.37	---	1.00 to 2.40	23/08/2017 12:56:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	1.6	0.0	18.3	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	1.9	0.0	17.5	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	2.0	0.0	17.2	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	2.1	0.0	17.0	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	2.2	0.0	16.8	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	2.2	0.0	16.8	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	2.2	0.0	16.8	0.0	0	0
WS1	1	50	4 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	2.2	0.0	16.8	0.0	0	0
WS1	1	50	4 (3)	2.37	2.41	1.00 to 2.40	23/08/2017 13:02:00	-	-	-	2.08	-	-	-	-	-	-
WS7	1	50	1	4.70	---	0.70 to 4.70	08/08/2017 14:07:00	1007	1007	$0.0_{(I)}$	-	-	-	-	-	-	-
WS7	1	50	1		---	0.70 to 4.70	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS7	1	50	1 (2)	4.70	---	0.70 to 4.70	08/08/2017 14:08:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	15 secs	-	-	-	-	3.9	0.0	17.5	0.0	3	0
WS7	1	50	1 (2)		---	0.70 to 4.70	30 secs	-	-	-	-	4.3	0.0	16.0	0.0	1	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS7	1	50	1 (2)		---	0.70 to 4.70	60 secs	-	-	-	-	5.2	0.0	14.8	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	90 secs	-	-	-	-	5.8	0.0	13.9	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	120 secs	-	-	-	-	6.0	0.0	13.7	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	180 secs	-	-	-	-	6.1	0.0	13.5	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	240 secs	-	-	-	-	6.1	0.0	13.5	0.0	0	0
WS7	1	50	1 (2)		---	0.70 to 4.70	300 secs	-	-	-	-	6.1	0.0	13.5	0.0	0	0
WS7	1	50	1 (3)	4.70	4.63	0.70 to 4.70	08/08/2017 14:14:00	-	-	-	DRY	-	-	-	-	-	-
WS7	1	50	2	4.70	---	0.70 to 4.70	10/08/2017 11:30:00	1021	1021	$0.0_{(I)}$	-	-	-	-	-	-	-
WS7	1	50	2		---	0.70 to 4.70	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS7	1	50	2 (2)	4.70	---	0.70 to 4.70	10/08/2017 11:31:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	15 secs	-	-	-	-	2.4	0.0	19.4	0.0	2	0
WS7	1	50	2 (2)		---	0.70 to 4.70	30 secs	-	-	-	-	2.9	0.0	17.9	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	60 secs	-	-	-	-	4.4	0.0	15.7	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	90 secs	-	-	-	-	5.4	0.0	14.2	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	120 secs	-	-	-	-	5.7	0.0	13.9	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	180 secs	-	-	-	-	5.8	0.0	13.7	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	240 secs	-	-	-	-	5.8	0.0	13.7	0.0	0	0
WS7	1	50	2 (2)		---	0.70 to 4.70	300 secs	-	-	-	-	5.8	0.0	13.7	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS7	1	50	2 (3)	4.70	4.63	0.70 to 4.70	10/08/2017 11:37:00	-	-	-	DRY	-	-	-	-	-	-
WS7	1	50	3	4.70	---	0.70 to 4.70	16/08/2017 12:00:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-
WS7	1	50	3		---	0.70 to 4.70	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS7	1	50	3 (2)	4.70	---	0.70 to 4.70	16/08/2017 12:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	15 secs	-	-	-	-	4.8	0.0	18.2	0.0	1	0
WS7	1	50	3 (2)		---	0.70 to 4.70	30 secs	-	-	-	-	5.1	0.0	16.1	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	60 secs	-	-	-	-	5.7	0.0	14.9	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	90 secs	-	-	-	-	5.9	0.0	14.6	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	120 secs	-	-	-	-	6.0	0.0	14.4	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	180 secs	-	-	-	-	6.0	0.0	14.4	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	240 secs	-	-	-	-	5.9	0.0	14.5	0.0	0	0
WS7	1	50	3 (2)		---	0.70 to 4.70	300 secs	-	-	-	-	5.9	0.0	14.5	0.0	0	0
WS7	1	50	3 (3)	4.70	4.62	0.70 to 4.70	16/08/2017 12:07:00	-	-	-	DRY	-	-	-	-	-	-
WS7	1	50	4	4.70	---	0.70 to 4.70	23/08/2017 12:19:00	1010	1010	$0.0_{(I)}$	-	-	-	-	-	-	-
WS7	1	50	4		---	0.70 to 4.70	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS7	1	50	4 (2)	4.70	---	0.70 to 4.70	23/08/2017 12:20:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	15 secs	-	-	-	-	4.8	0.0	18.8	0.0	1	0
WS7	1	50	4 (2)		---	0.70 to 4.70	30 secs	-	-	-	-	5.0	0.0	16.3	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
[redacted]	05/09/17	[redacted]	24/08/17	732959

Contract: **515 Stockwood Road, Brislington**

AGS

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS7	1	50	4 (2)		---	0.70 to 4.70	60 secs	-	-	-	-	5.1	0.0	16.1	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	90 secs	-	-	-	-	5.2	0.0	15.9	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	120 secs	-	-	-	-	5.2	0.0	15.8	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	180 secs	-	-	-	-	5.3	0.0	15.8	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	240 secs	-	-	-	-	5.3	0.0	15.8	0.0	0	0
WS7	1	50	4 (2)		---	0.70 to 4.70	300 secs	-	-	-	-	5.3	0.0	15.8	0.0	0	0
WS7	1	50	4 (3)	4.70	4.62	0.70 to 4.70	23/08/2017 12:26:00	-	-	-	DRY	-	-	-	-	-	-
WS10	1	50	1	2.40	---	1.00 to 2.40	08/08/2017 13:07:00	1007	1007	$0.0_{(I)}$	-	-	-	-	-	-	-
WS10	1	50	1		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS10	1	50	1 (2)	2.40	---	1.00 to 2.40	08/08/2017 13:08:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	1 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.5	0.0	20.6	0.0	1	0
WS10	1	50	1 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.6	0.0	20.3	0.0	1	0
WS10	1	50	1 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	1.1	0.0	19.8	0.0	1	0
WS10	1	50	1 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	1.5	0.0	19.4	0.0	1	0
WS10	1	50	1 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	1.8	0.0	19.0	0.0	0	0
WS10	1	50	1 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	1.6	0.0	18.9	0.0	1	0
WS10	1	50	1 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.4	0.0	19.0	0.0	1	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS10	1	50	1 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.3	0.0	19.0	0.0	0	0
WS10	1	50	1 (3)	2.40	2.52	1.00 to 2.40	08/08/2017 13:14:00	-	-	-	1.73	-	-	-	-	-	-
WS10	1	50	2	2.40	---	1.00 to 2.40	10/08/2017 11:45:00	1021	1021	$0.0_{(I)}$	-	-	-	-	-	-	-
WS10	1	50	2		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS10	1	50	2 (2)	2.40	---	1.00 to 2.40	10/08/2017 11:46:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	1.0	0.0	19.5	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	1.2	0.0	18.5	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	1.3	0.0	18.2	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	1.4	0.0	18.0	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	1.5	0.0	17.8	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	1.4	0.0	17.8	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.2	0.0	18.0	0.0	0	0
WS10	1	50	2 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.1	0.0	18.2	0.0	0	0
WS10	1	50	2 (3)	2.40	2.52	1.00 to 2.40	10/08/2017 11:52:00	-	-	-	2.05	-	-	-	-	-	-
WS10	1	50	3	2.40	---	1.00 to 2.40	16/08/2017 12:13:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-
WS10	1	50	3		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS10	1	50	3 (2)	2.40	---	1.00 to 2.40	16/08/2017 12:14:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	1.8	0.0	19.7	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
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Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
[redacted]	05/09/17	[redacted]	24/08/17	732959

Contract: **515 Stockwood Road, Brislington**

AGS

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS10	1	50	3 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	2.0	0.0	18.5	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	2.2	0.0	18.2	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	2.3	0.0	18.1	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	2.0	0.0	18.2	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.7	0.0	18.4	0.0	0	0
WS10	1	50	3 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.6	0.0	18.5	0.0	0	0
WS10	1	50	3 (3)	2.40	2.51	1.00 to 2.40	16/08/2017 12:20:00	-	-	-	2.14	-	-	-	-	-	-
WS10	1	50	4	2.40	---	1.00 to 2.40	23/08/2017 12:30:00	1010	1010	$0.0_{(I)}$	-	-	-	-	-	-	-
WS10	1	50	4		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS10	1	50	4 (2)	2.40	---	1.00 to 2.40	23/08/2017 12:31:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	1.4	0.0	19.7	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	1.5	0.0	18.4	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	1.5	0.0	18.3	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	1.5	0.0	18.3	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	1.5	0.0	18.3	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	1.4	0.0	18.5	0.0	0	0
WS10	1	50	4 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	1.2	0.0	18.7	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS10	1	50	4 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	1.1	0.0	18.9	0.0	0	0
WS10	1	50	4 (3)	2.40	2.52	1.00 to 2.40	23/08/2017 12:37:00	-	-	-	1.98	-	-	-	-	-	-
WS12	1	50	1	2.40	---	1.00 to 2.40	08/08/2017 13:26:00	1007	1007	$0.0_{(I)}$	-	-	-	-	-	-	-
WS12	1	50	1		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS12	1	50	1 (2)	2.40	---	1.00 to 2.40	08/08/2017 13:27:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS12	1	50	1 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.3	0.0	20.7	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.2	0.0	20.9	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	0.1	0.0	21.1	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	0.1	0.0	21.1	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	0.1	0.0	21.1	0.0	1	0
WS12	1	50	1 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	0.1	0.0	21.2	0.0	1	0
WS12	1	50	1 (3)	2.40	2.47	1.00 to 2.40	08/08/2017 13:33:00	-	-	-	0.40	-	-	-	-	-	-
WS12	1	50	2	2.40	---	1.00 to 2.40	10/08/2017 12:01:00	1021	1021	$0.0_{(I)}$	-	-	-	-	-	-	-
WS12	1	50	2		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS12	1	50	2 (2)	2.40	---	1.00 to 2.40	10/08/2017 12:02:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS12	1	50	2 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.2	0.0	20.6	0.0	1	0
WS12	1	50	2 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.2	0.0	20.5	0.0	1	0
WS12	1	50	2 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	0.1	0.0	20.5	0.0	1	0
WS12	1	50	2 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	0.1	0.0	20.4	0.0	0	0
WS12	1	50	2 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	0.1	0.0	20.4	0.0	0	0
WS12	1	50	2 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	0.1	0.0	20.4	0.0	0	0
WS12	1	50	2 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	0.1	0.0	20.3	0.0	0	0
WS12	1	50	2 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	0.1	0.0	20.2	0.0	0	0
WS12	1	50	2 (3)	2.40	2.37	1.00 to 2.40	10/08/2017 12:08:00	-	-	-	0.88	-	-	-	-	-	-
WS12	1	50	3	2.40	---	1.00 to 2.40	16/08/2017 12:23:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-
WS12	1	50	3		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS12	1	50	3 (2)	2.40	---	1.00 to 2.40	16/08/2017 12:24:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS12	1	50	3 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.2	0.0	20.7	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.1	0.0	20.7	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	0.1	0.0	20.6	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	0.1	0.0	20.6	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	0.1	0.0	20.6	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	0.1	0.0	20.6	0.0	1	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

[Pressures] Previous During Start End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS12	1	50	3 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	0.1	0.0	20.5	0.0	1	0
WS12	1	50	3 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	0.1	0.0	20.5	0.0	1	0
WS12	1	50	3 (3)	2.40	2.38	1.00 to 2.40	16/08/2017 12:30:00	-	-	-	0.92	-	-	-	-	-	-
WS12	1	50	4	2.40	---	1.00 to 2.40	23/08/2017 12:43:00	1010	1010	$0.0_{(I)}$	-	-	-	-	-	-	-
WS12	1	50	4		---	1.00 to 2.40	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-
WS12	1	50	4 (2)	2.40	---	1.00 to 2.40	23/08/2017 12:44:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS12	1	50	4 (2)		---	1.00 to 2.40	15 secs	-	-	-	-	0.3	0.0	20.6	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	30 secs	-	-	-	-	0.2	0.0	20.7	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	60 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	90 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	120 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	180 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	240 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (2)		---	1.00 to 2.40	300 secs	-	-	-	-	0.1	0.0	20.8	0.0	1	0
WS12	1	50	4 (3)	2.40	2.37	1.00 to 2.40	23/08/2017 12:50:00	-	-	-	0.75	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
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Compiled By	Date	Checked By	Date	Contract Ref:
[redacted]	**05/09/17**	[redacted]	**24/08/17**	**732959**

Contract: **515 Stockwood Road, Brislington**

Page: **11** of **11**

APPENDIX G -
DESK STUDY INFORMATION

(i) Landmark Environmental Data Sheets

(ii) Historical Mapping

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
132920054_1_1

Customer Reference:
732959

National Grid Reference:
362560, 170010

Slice:
A

Site Area (Ha):
0.69

Search Buffer (m):
1000

Site Details:

Ground Floor, 515-517
Stockwood Road
Brislington
BRISTOL
BS4 5LR

Client Details:

S Pond
Structural Soils Ltd
The Old School House
Stillhouse Lane, Bedminster
Bristol
BS3 4EB

Prepared For:

515 Stockwood LLP

STRUCTURAL SOILS LTD
A Member of the RSK Group plc

Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 2			2	27
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 9			4	
Integrated Pollution Prevention And Control	pg 9		1		
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 10		1	4	3
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 11		Yes		
Pollution Incidents to Controlled Waters	pg 11				2
Prosecutions Relating to Authorised Processes	pg 11			1	
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 11				(*7)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 13	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 13	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 14		1	14	43

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites	pg 21			1	
Historical Landfill Sites	pg 21			1	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 21		3	3	
Local Authority Landfill Coverage	pg 22	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 23			1	1
Potentially Infilled Land (Non-Water)	pg 23			1	
Potentially Infilled Land (Water)	pg 23			1	3
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites	pg 23				1
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 24	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 24	Yes		Yes	Yes
BGS Recorded Mineral Sites	pg 26		2	2	1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 27	Yes	n/a	n/a	n/a
Mining Instability	pg 27	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 27	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 27	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards				n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 27	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 28	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 29	1	30	96	116
Fuel Station Entries	pg 49		1	1	2
Points of Interest - Commercial Services	pg 49		19	28	22
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 55			5	11
Points of Interest - Public Infrastructure	pg 57		2		8
Points of Interest - Recreational and Environmental	pg 57			2	
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 58				1
Areas of Adopted Green Belt	pg 58		1		1
Areas of Unadopted Green Belt	pg 58				1
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 58			1	
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	0	1	362550 170000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	3	1	362500 170012
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	36	1	362600 170100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (E)	188	1	362800 170000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	195	1	362750 170200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	207	1	362800 170150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (SW)	233	1	362400 169750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (E)	240	1	362850 170100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (E)	287	1	362900 170050
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (NE)	303	1	362800 170300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (SW)	333	1	362300 169700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SW)	344	1	362350 169650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SW)	372	1	362300 169650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	388	1	363000 170000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (SW)	388	1	362350 169600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	405	1	362450 169550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	437	1	362800 169600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (E)	443	1	363050 169950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	451	1	362100 170200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NW (SE)	499	1	362900 169600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Flowers Hill, Junc With Bath Road, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011324 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	256	2	362410 170270
1	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Bath Road, Junc Flowers Hill, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011323 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	262	2	362400 170270
2	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Ironmould Lane, 120m North Of Bath Road, Bristol, Bs4 5rt Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011185 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 27th March 2006 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Application refused - 1961 Rivers (Prevention of Pollution) Act** Positional Accuracy: Located by supplier to within 100m	A14NE (E)	702	2	363310 170140
3	**Discharge Consents** Operator: Bristol City Council Property Type: SPORT, AMUSEMENT+RECREATION/GOLF CLUB/GYM/THEME PK/SPA Location: Stockwood Open Space, Stockwood Road, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 103860 Permit Version: 1 Effective Date: 14th March 2008 Issued Date: 14th March 2008 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: The Scotland Stream **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	732	2	363100 169470

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Bristol City Council Property Type: CSO ON UNADOPTED SEWERAGE NETWORK (NOT WATER COMPANY) Location: Stockwood Lane, Near Old Tip, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011330 Permit Version: 2 Effective Date: 14th April 2009 Issued Date: 14th April 2009 Revocation Date: Not Supplied Discharge Type: Storm sewage overflow discharge Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of River Avon **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	740	2	363120 169480
3	**Discharge Consents** Operator: Bristol City Council Property Type: CSO ON UNADOPTED SEWERAGE NETWORK (NOT WATER COMPANY) Location: Stockwood Lane, Near Old Tip, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011330 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 13th April 2009 Discharge Type: Storm sewage overflow discharge Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of River Avon **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	740	2	363120 169480
4	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 247 Broomhill Road, Bristol, Bs4 4tu Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011329 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: 12th September 1989 Revocation Date: 23rd December 2008 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A19NW (NE)	805	2	363090 170710
5	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Bath Road, Junc Flowers Hill, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100582/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	813	2	361990 170645

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Bath Road, Junc Flowers Hill, Bristol Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100581/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	817	2	361990 170650
6	**Discharge Consents** Operator: Wessex Water Services Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Brislington Hill Swr Storm Overflow, Brislington, Bristol, Bs4 5bg Authority: Environment Agency, South West Region Catchment Area: Not Supplied Reference: 012935 Permit Version: 2 Effective Date: 24th October 2013 Issued Date: 24th October 2013 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	869	2	361980 170709
6	**Discharge Consents** Operator: Wessex Water Services Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Brislington Hill Swr Storm Overflow, Brislington, Bristol, Bs4 5bg Authority: Environment Agency, South West Region Catchment Area: Not Supplied Reference: 012935 Permit Version: 3 Effective Date: 16th January 2013 Issued Date: 16th January 2013 Revocation Date: 23rd October 2013 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: Varied under EPR 2010** Positional Accuracy: Manually positioned within the geographical locality	A17NE (NW)	869	2	361980 170709
6	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Brislington Hill, S.S.O, Brislington, Bristol, Bs4 4lf Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 010326 Permit Version: 1 Effective Date: 25th April 1988 Issued Date: Not Supplied Revocation Date: 14th November 1997 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	884	2	361970 170720

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 8 Sidcot, Bristol, Bs4 4ty Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011183 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A19NW (NE)	875	2	363200 170710
7	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 12 Sidcot, Bristol, Bs4 4ty Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011184 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A19NE (NE)	917	2	363240 170730
8	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Church Hill, Junc With School Road, Bristol, Bs4 4lt Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011319 Permit Version: 2 Effective Date: 28th September 2010 Issued Date: 28th September 2010 Revocation Date: 3rd September 2014 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Trib. Brislington Brook **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	904	2	362080 170830
8	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Church Hill, Junc With School Road, Bristol, Bs4 4lt Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011319 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 27th September 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	904	2	362080 170830

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Rear Of 8 Hulse Road, Bristol, Bristol, Bs4 5al Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011315 Permit Version: 2 Effective Date: 28th September 2010 Issued Date: 28th September 2010 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Trib. Brislington Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	913	2	361750 170520
9	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Rear Of 8 Hulse Road, Bristol, Bristol, Bs4 5al Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011315 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 27th September 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	913	2	361750 170520
10	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Ellesmere Road Cso, R.O. 15/16 Ellesmere Road, Brislington, Bristol, Bs4 5dy Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 103766 Permit Version: 1 Effective Date: 1st April 2008 Issued Date: 21st September 2007 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: The Brislington Brook(S) **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	916	2	361590 169930
11	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Bristol Hill, Outside No 43, Bristol, Bs4 5aa Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011317 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 13th December 1995 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A17NW (NW)	949	2	361860 170710

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Ellesmere Road Cso, Outside No.1 Ellesmere Road, Brislington, Bristol, Bs4 5dy Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100580/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: 31st March 2008 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A12NW (W)	956	2	361550 170065
12	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Ellesmere Road S.W.O, Bristol, Bs4 5dy Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 010325 Permit Version: 1 Effective Date: 25th April 1988 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A12NW (W)	956	2	361550 170070
13	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 112 School Road, Bristol, Bs4 4ly Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011321 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 6th October 1998 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Temporary Consents (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 100m	A17NE (N)	986	2	362190 170980
13	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 112 School Road, Bristol, Bs4 4ly Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100583/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Brislington Brook **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A17NE (N)	1000	2	362180 170990

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Discharge Consents** Operator: Wessex Water Services Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 247 Broomhill Road, Bristol, Bs4 4tu Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100587/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Avon(S) **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	987	2	363390 170670
14	**Discharge Consents** Operator: Wessex Water Services Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Outside 8 Sidcot, Bristol, Bs4 4ty Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100586/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Avon(S) **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	987	2	363390 170670
14	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: 12 Sidcot Road Cso, Outside 12 Sidcot Road, Brislington, Bristol, Bs4 4ty Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 100585/Cs/01 Permit Version: 1 Effective Date: 6th October 1998 Issued Date: 6th October 1998 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: River Avon **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	987	2	363390 170670
15	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Bristol Hill, Outside No 25, Bristol, Bs4 5aa Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011316 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 13th December 1995 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A17NW (NW)	998	2	361790 170710

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Discharge Consents** Operator: Wessex Water Services Ltd Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: Grove Park Avenue, Outside No 62, Bristol, Bs4 4jq Authority: Environment Agency, South West Region Catchment Area: Tidal Bristol Avon Reference: 011318 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 13th December 1995 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A17NW (NW)	1000	2	361860 170780
17	**Integrated Pollution Controls** Name: European Friction Industries Ltd Location: Enterprise House, 6/7 Bonville Road, Brislinton, BRISTOL, Avon, BS4 5PE Authority: Environment Agency, South West Region Permit Reference: BE5548 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 3.2 A (B) processes involving Asbestos within the Mineral Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	450	2	362485 170511
17	**Integrated Pollution Controls** Name: European Friction Industries Ltd Location: Enterprise House, 6-7 Bonville Road, Brislington, BRISTOL, Avon, BS4 5NZ Authority: Environment Agency, South West Region Permit Reference: BB6416 Dated: 30th July 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 3.2 A (B) processes involving Asbestos within the Mineral Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A18SW (N)	453	2	362466 170510
17	**Integrated Pollution Controls** Name: European Friction Industries Ltd Location: Enterprise House, 6-7 Bonville Road, Brislington, BRISTOL, Avon, BS4 5NZ Authority: Environment Agency, South West Region Permit Reference: AM8555 Dated: 1st May 1994 Process Type: IPC minor (non-substantial) variation to previous variation Description: 3.2 A (B) processes involving Asbestos within the Mineral Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A18SW (N)	454	2	362461 170510
17	**Integrated Pollution Controls** Name: European Friction Industries Ltd Location: Enterprise House, 6-7 Bonville Road, Brislington, BRISTOL, Avon, BS4 5NZ Authority: Environment Agency, South West Region Permit Reference: AI1655 Dated: 30th July 1993 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 3.2 A (B) processes involving Asbestos within the Mineral Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A18SW (N)	459	2	362461 170515
18	**Integrated Pollution Prevention And Control** Name: Metoxal Uk Ltd Location: Anodising Plant Brislington, Unit 1&2, Flowers Hill Industrial Estate,Brislington,, Bristol, Avon, BS4 5JJ Authority: Environment Agency, South West Region Permit Reference: Fp3435sb Original Permit Ref: Fp3435sb Effective Date: 6th September 2006 **Status: Revoked** Application Type: Application App. Sub Type: New Positional Accuracy: Located by supplier to within 100m Activity Code: 2.3 A(1) (A) Activity Description: Surface Treating Metals And Plastics; Electrolytic/Chemical Greater Than 30 Cubic Metres Primary Activity: Y	A13SW (SW)	131	2	362400 169900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Local Authority Pollution Prevention and Controls** Name: Transport Brakes Ltd Location: Emery Road, BRISTOL, Avon, BS4 5PF Authority: Bristol City Council, Environmental Health Department Permit Reference: AF2868 Dated: 6th May 1992 Process Type: Application under SI 318, 1989 The Control of Industrial Air Pollution (Registration of Works) Regulations 1989 Description: Processes registered under S. 9 of the Alkali Act 1906 and S. 5 of the Health & Safety at Work Act 1974 **Status: Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A13NE (NE)	205	3	362676 170256
20	**Local Authority Pollution Prevention and Controls** Name: Brislingotn Park (Forecourt) Ltd Location: 803-805 Bath Road, Brislington, BRISTOL, Avon, BS4 5NL Authority: Bristol City Council, Environmental Health Department Permit Reference: Ep199 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A18SW (NW)	393	3	362304 170360
21	**Local Authority Pollution Prevention and Controls** Name: Garlen Fabrications Location: 18-20 Emery Road, BRISTOL, Avon, BS4 5QA Authority: Bristol City Council, Environmental Health Department Permit Reference: EP034 Dated: 31st March 1993 Process Type: Local Authority Air Pollution Control Description: PG2/1Furnaces for the extraction of non-ferrous metal from scrap **Status: Authorisation revokedRevoked** Positional Accuracy: Automatically positioned to the address	A18SE (N)	459	3	362691 170514
22	**Local Authority Pollution Prevention and Controls** Name: P J Pothecary Location: 1A Bonville Road, BRISTOL, BS4 5NZ Authority: Bristol City Council, Environmental Health Department Permit Reference: AF2795 Dated: 6th May 1992 Process Type: Application under SI 318, 1989 The Control of Industrial Air Pollution (Registration of Works) Regulations 1989 Description: Processes registered under S. 9 of the Alkali Act 1906 and S. 5 of the Health & Safety at Work Act 1974 **Status: Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	485	3	362481 170546
22	**Local Authority Pollution Prevention and Controls** Name: P J Pothecary Location: 1A Bonville Road, BRISTOL, BS4 5NZ Authority: Bristol City Council, Environmental Health Department Permit Reference: AG9892 Dated: 17th November 1992 Process Type: Application under SI 318, 1989 The Control of Industrial Air Pollution (Registration of Works) Regulations 1989 Description: Processes registered under S. 9 of the Alkali Act 1906 and S. 5 of the Health & Safety at Work Act 1974 **Status: Authorised** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	486	3	362481 170547
23	**Local Authority Pollution Prevention and Controls** Name: Southern L & F Ltd Location: 19 Clothier Road, Brislington, BRISTOL, Avon, BS4 5SS Authority: Bristol City Council, Environmental Health Department Permit Reference: EP035 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG2/1Furnaces for the extraction of non-ferrous metal from scrap **Status: Application Withdrawn** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	543	3	362764 170583
24	**Local Authority Pollution Prevention and Controls** Name: Pitstop Garages (Bristol) Ltd Location: 5 Clothier Road, Brislington, BRISTOL, Avon, BS4 5PS Authority: Bristol City Council, Environmental Health Department Permit Reference: EP003 Dated: 31st March 1993 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	598	3	362721 170649

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Local Authority Pollution Prevention and Controls** Name: Murco Service Station Location: The Square, Brislington, BRISTOL, Avon, BS4 5AD Authority: Bristol City Council, Environmental Health Department Permit Reference: Ep158 Dated: 31st December 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	859	3	361950 170671
	Nearest Surface Water Feature	A13NE (NE)	245	-	362730 170276
26	**Pollution Incidents to Controlled Waters** Property Type: No Premises Identified Location: Brislington Brook, BRISTOL, Bristol City Authority: Environment Agency, South West Region Pollutant: No Pollutant Note: Not Supplied Incident Date: 29th April 1999 Incident Reference: 38602 Catchment Area: Mid Avon Catchment Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Approximate location provided by supplier	A17SE (NW)	702	2	362000 170500
27	**Pollution Incidents to Controlled Waters** Property Type: Miscellaneous Drainage: Surface Water Drainage Location: Conf With Siston Bk-Conham, BRISLINGTON Authority: Environment Agency, South West Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: Not Supplied Incident Date: 27th August 1996 Incident Reference: 17632 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Pollution Risk: Water Quality Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	868	2	362100 170800
28	**Prosecutions Relating to Authorised Processes** Location: Wilverley Industrial Estate, Bath Road, BRISLINGTON, Avon, BS4 Prosecution Text: EA News Release 21/07/1997 (Case 3 of 4), Illegally dumping waste on four sites in the south-west and failing to obtain registration as a carrier of waste. Given a six month prison sentence. Prosecution Act: EPA90 Hearing Date: 21st July 1997 Verdict: Guilty Fine: 0 Costs: 0 Positional Accuracy: Manually positioned within the geographical locality	A13NW (NW)	254	2	362439 170287
	Water Abstractions Operator: Imperial Athletic Club Licence Number: 175301S186 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, South West Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: River Daily Rate (m3): 0 Yearly Rate (m3): 272 Details: St. Anne's W/C Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11NW (W)	1307	2	361200 170100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr P J Hemmings Licence Number: 17/53/001/S/147b Permit Version: 100 Location: Charlton Bottom Stream Authority: Environment Agency, South West Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Charlton Bottom W/C Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 1st April 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5SW (SE)	1716	2	363600 168600
	Water Abstractions Operator: D & P Moon Licence Number: 17/53/001/S/090 Permit Version: 100 Location: Stockwood Bottom W/C Authority: Environment Agency, South West Region Abstraction: Horticulture And Nurseries: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): Not Supplied Details: Stockwood Bottom W/C Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 25th March 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4SE (SE)	1826	2	363500 168400
	Water Abstractions Operator: Mr P J Hemmings Licence Number: 17/53/001/S/147a Permit Version: 100 Location: Charlton Bottom Authority: Environment Agency, South West Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Charlton Bottom W/C Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5SW (SE)	1856	2	363700 168500
	Water Abstractions Operator: Mr G L Ellis Licence Number: 17/53/001/S/374 Permit Version: 100 Location: Charlton Bottom Authority: Environment Agency, South West Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 1st August 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A5NE (SE)	1918	2	364040 168740

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr P J Young Licence Number: 175301S374 Permit Version: Not Supplied Location: 15 Queens Road, Keynsham, BRISTOL Authority: Environment Agency, South West Region Abstraction: Spray Irrigation And Agriculture Abstraction Type: Not Supplied Source: River Daily Rate (m3): 18 Yearly Rate (m3): 726 Details: Charlton Bottom Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5NE (SE)	1927	2	364100 168795
	Water Abstractions Operator: R C Stokes Licence Number: 175301S386 Permit Version: Not Supplied Location: BRISTOL Authority: Environment Agency, South West Region Abstraction: Spray Irrigation And Agriculture Abstraction Type: Not Supplied Source: River Daily Rate (m3): 27 Yearly Rate (m3): 1140 Details: Expired: 07-Oct-1992; Charlton Bottom Watercourse Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A5NE (SE)	1989	2	364100 168700
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 37 Southern Cotswolds Scale: 1:100,000	A13NW (NW)	0	2	362538 170025
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (H3)- Coarse textured or moderately shallow soils which readily transmit non-absorbed pollutants and liquid discharges but which have some ability to attenuate absorbed pollutants because of their large clay or organic matter contents Map Sheet: Sheet 37 Southern Cotswolds Scale: 1:100,000	A13NE (SW)	0	2	362559 170012
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SE (S)	0	1	362559 170000
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (SW)	0	1	362559 170012
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A13NE (NE)	245	4	362730 170276
30	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 145.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A14NW (E)	293	4	362902 170106
31	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 371.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (SW)	365	4	362194 169788
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 45.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (SW)	415	4	362163 169739
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (SW)	436	4	362167 169695
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (SW)	440	4	362168 169686
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 42.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (SW)	444	4	362171 169677
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 522.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	449	4	362202 169633
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	449	4	362193 169642

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	449	4	362193 169642
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	456	4	362188 169638
40	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	487	4	362164 169617
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 66.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	488	4	362164 169617
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 115.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A8NE (S)	499	4	362593 169454
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 21.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A8NE (S)	499	4	362597 169455
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	507	4	361997 169973
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 68.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12NE (W)	518	4	361987 170048
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12NE (W)	518	4	361987 170048

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 80.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	536	4	361969 169955
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	552	4	362123 169567
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 138.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	553	4	362122 169566
50	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 14.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A8NW (S)	599	4	362542 169350
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 30.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	610	4	361900 169912
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	624	4	361885 169916
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	626	4	361885 169906
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 199.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SE (W)	627	4	361884 169902
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 79.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	666	4	362098 169434

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A9NW (SE)	739	4	363140 169503
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 594.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A9NW (SE)	739	4	363143 169505
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A9NW (SE)	739	4	363140 169503
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 50.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7NE (SW)	743	4	362061 169365
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 70.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SW (W)	778	4	361764 169759
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 747.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Brislington Brook Catchment Name: Avon Bristol Primacy: 1	A17SE (NW)	779	4	361948 170559
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 21.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7SE (SW)	792	4	362044 169317
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7SE (SW)	812	4	362036 169298
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 334.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A18NE (N)	819	4	362686 170879

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 71.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Brislington Brook Catchment Name: Avon Bristol Primacy: 1	A17SE (NW)	828	4	361988 170662
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 72.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SW (W)	834	4	361707 169751
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 130.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A18NW (N)	836	4	362456 170897
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 64.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7SE (SW)	859	4	362018 169252
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SW (W)	885	4	361645 169787
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 76.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Brislington Brook Catchment Name: Avon Bristol Primacy: 1	A17NE (NW)	889	4	361978 170734
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 483.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SW (W)	890	4	361630 169827
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1043.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A12SW (W)	893	4	361637 169781
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 32.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7SE (SW)	921	4	361998 169191

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Brislington Brook Catchment Name: Avon Bristol Primacy: 1	A17NE (NW)	932	4	361999 170807
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 155.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A7SE (SW)	952	4	361987 169160
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A18NW (N)	954	4	362427 171012
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 80.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A18NW (N)	957	4	362425 171015
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 252.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Brislington Brook Catchment Name: Avon Bristol Primacy: 1	A17NE (NW)	965	4	362034 170873
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 91.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A3NE (S)	985	4	362666 168974
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A3NE (S)	988	4	362685 168974
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A3NE (S)	989	4	362685 168973
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A3NE (S)	990	4	362683 168972

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A3NE (S)	991	4	362682 168971
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 128.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A19SE (NE)	991	4	363396 170669
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A11NE (W)	992	4	361538 170228
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Avon Bristol Primacy: 1	A11NE (W)	994	4	361536 170230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	**BGS Recorded Landfill Sites** Site Name: Stockwood Lane Location: BRISTOL, Avon Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A8NE (SE)	440	-	362876 169658
88	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Bristol, Avon Name: Stockwood Lane Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD09541 First Input Date: 31st December 1954 Last Input Date: 31st December 1978 Specified Waste Type: Deposited Waste included Industrial, Commercial and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: 2578 Other Ref: A 006	A8NE (SE)	441	2	362876 169657
89	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Knowle Name: West Town Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD34788 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: Not Supplied	A12SW (W)	868	2	361644 169879
90	**Licensed Waste Management Facilities (Locations)** Licence Number: 26104 Location: Unit 2b, Flowers Hill, Brislington, Bristol, Avon, BS4 5JJ Operator Name: Wolland Frederick Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: End of Life Vehicles **Licence Status: Issued** Issued: 26th July 2004 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13SW (SW)	89	2	362430 169940
91	**Licensed Waste Management Facilities (Locations)** Licence Number: 103704 Location: Unit 1, Flowers Hill Close, Brislington, Bristol, Avon, BS4 5LF Operator Name: All Car Spares Ltd Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: Vehicle Depollution Facility <5000 tps **Licence Status: Issued** Issued: 24th May 2012 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	138	2	362440 170140

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
92	**Licensed Waste Management Facilities (Locations)** Licence Number: 26125 Location: 822 Bath Road, Brislington, Bristol, Avon, BS4 5LQ Operator Name: Bewley Alan Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: End of Life Vehicles **Licence Status: Surrendered** Issued: 25th April 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 13th May 2013 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	198	2	362430 170210
93	**Licensed Waste Management Facilities (Locations)** Licence Number: 26144 Location: 9 Clothier Road, Brislington, Bristol, Avon, BS4 5PS Operator Name: The Workshop Saab Specialist Ltd Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: End of Life Vehicles **Licence Status: Issued** Issued: 16th March 2006 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18SE (N)	472	2	362760 170510
94	**Licensed Waste Management Facilities (Locations)** Licence Number: 26121 Location: 236 Broomhill Road, Brislington, Bristol, Avon, BS4 5RG Operator Name: Chiswell Dean Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: End of Life Vehicles **Licence Status: Issued** Issued: 25th April 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18SE (NE)	477	2	362890 170450
94	**Licensed Waste Management Facilities (Locations)** Licence Number: 402852 Location: 234-236 Broomhill Road, Brislington, Bristol, BS4 5RG Operator Name: Euro Motor Servicing Ltd Operator Location: Not Supplied Authority: Environment Agency - South West Region, Wessex Area Site Category: Vehicle depollution facility **Licence Status: Issued** Issued: 20th June 2016 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	498	2	362902 170467
	Local Authority Landfill Coverage Name: Bristol City Unitary Authority - Has no landfill data to supply		0	5	362559 170012
	Local Authority Landfill Coverage Name: Bath and North East Somerset Unitary Council - Has supplied landfill data		748	6	363154 169504

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
95	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: Not Supplied Authority: Bath and North East Somerset Council, Planning Services Department **Last Reported Status:** **Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A9NW (SE)	490	6	362907 169619
96	**Local Authority Recorded Landfill Sites** Location: Not Supplied Reference: Not Supplied Authority: Bath and North East Somerset Council, Planning Services Department **Last Reported Status:** **Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A8SE (SE)	784	6	362891 169255
97	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A14SW (SE)	358	-	362922 169840
98	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1955	A14SW (E)	380	-	362991 169987
99	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A17SE (NW)	802	-	361988 170629
100	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1955	A12SW (W)	864	-	361647 169887
101	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1921	A19SE (NE)	954	-	363364 170649
102	**Registered Waste Treatment or Disposal Sites** Licence Holder: D G Hales Licence Reference: L/BL/P/311 Site Location: Unit 23 Brislington Trading Estate, Dixon Road, Brislington, BRISTOL, Avon, BS4 5QW Operator Location: As Site Address Authority: Environment Agency - South West Region, North Wessex Area Site Category: Scrapyard Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: May not be working & exemptExempt Dated: 12th August 1994 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Max.Storage In Licence Scrap Cars/Vehicles/Components Prohibited Waste: Liable To Cause Environmental Hazards Liqs/Sludges Not Integral To Vehicles Waste N.O.S.	A18NE (N)	751	2	362750 170800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Warwickshire Group	A13NE (SW)	0	1	362559 170012
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (SW)	0	1	362559 170012
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (S)	496	1	362412 169464
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NE (W)	521	1	362000 170136
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NE (W)	543	1	362000 170202
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (NE)	585	1	363000 170500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NE (SW)	757	1	361885 169539

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A7NW (SW)	790	1	361869 169504
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NE (NW)	857	1	362000 170711
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A8SW (S)	858	1	362467 169092
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NE (NW)	860	1	361975 170694
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NE (NW)	893	1	361937 170705
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A8SW (S)	899	1	362458 169052

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A8SW (S)	948	1	362515 169000
103	**BGS Recorded Mineral Sites** Site Name: Brislington Pit Location: Bath Road, Brislington, Bristol, Avon Source: British Geological Survey, National Geoscience Information Service Reference: 25144 Type: Underground **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Upper Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	99	1	362625 170160
104	**BGS Recorded Mineral Sites** Site Name: Brislington Pit Location: Bath Road, Brislington, Bristol, Avon Source: British Geological Survey, National Geoscience Information Service Reference: 25145 Type: Underground **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Upper Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	141	1	362465 170165
105	**BGS Recorded Mineral Sites** Site Name: Cherry Orchard Farm Location: , Brislington, Bristol, Avon Source: British Geological Survey, National Geoscience Information Service Reference: 61424 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Farrington Member And Barren Red Member (Digmap Composite) Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A14SW (SE)	353	1	362915 169838
105	**BGS Recorded Mineral Sites** Site Name: Cherry Orchard Farm Quarry Location: , Bristol, Bristol, Avon Source: British Geological Survey, National Geoscience Information Service Reference: 67488 Type: Opencast **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Farrington Member And Barren Red Member (Undifferentiated) Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A14SW (E)	373	1	362946 169854
106	**BGS Recorded Mineral Sites** Site Name: Brislington Pit Location: , Brislington, Bristol, Avon Source: British Geological Survey, National Geoscience Information Service Reference: 25146 Type: Underground **Status: Ceased** Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Upper Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	922	1	361975 170775

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A13NE (SW)	0	7	362559 170012
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13NE (SW)	0	-	362559 170012
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	362543 170000
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	362545 169998
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	148	1	362725 170158
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	208	1	362754 170213
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	215	1	362363 169803
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	362543 170000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	362545 169998
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	51	1	362643 170103
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	141	1	362752 170000
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	208	1	362754 170213
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	362574 170050
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	1	362574 170050
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	1	362559 170012
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	362559 170000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
107	**Contemporary Trade Directory Entries** Name: Arrow Services Location: 513, Stockwood Road, Bristol, BS4 5LR Classification: Cleaning Materials & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A13NE (NE)	0	-	362587 170061
108	**Contemporary Trade Directory Entries** Name: Van World Location: 513, Stockwood Road, Brislington, Bristol, BS4 5LR Classification: Commercial Vehicle Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	14	-	362580 169985
109	**Contemporary Trade Directory Entries** Name: Brislington M O T Centre Location: Unit E3, Flowers Hill, Bristol, Avon, BS4 5JJ Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	47	-	362463 169976
110	**Contemporary Trade Directory Entries** Name: Throsper Engineering Co Ltd Location: Flowers Hill Close, Bristol, BS4 5LF Classification: Tool Design, Manufacturers & Makers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	67	-	362470 170074
111	**Contemporary Trade Directory Entries** Name: Reynolds Collcutt Furniture Location: 4, Flowers Hill Close, BRISTOL, BS4 5LF Classification: Cabinet Makers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	69	-	362510 170106
112	**Contemporary Trade Directory Entries** Name: Supreme Alushield Ltd Location: Unit 1/2, Flowers Hill, Bristol, BS4 5JJ Classification: Anodisers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	94	-	362426 169936
112	**Contemporary Trade Directory Entries** Name: Igp (Uk) Ltd Location: Unit 1/2, Flowers Hill, Bristol, Avon, BS4 5JJ Classification: Powder Coatings **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	94	-	362426 169936
112	**Contemporary Trade Directory Entries** Name: Bristol Peugeot Location: Unit 2B, Flowers Hill, Bristol, BS4 5JJ Classification: Car Breakers & Dismantlers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	94	-	362426 169936
112	**Contemporary Trade Directory Entries** Name: Bristol Renault Brakers Location: Unit 2B, Flowers Hill, Bristol, BS4 5JJ Classification: Car Breakers & Dismantlers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	94	-	362426 169936
112	**Contemporary Trade Directory Entries** Name: Igp (Uk) Contracts Ltd Location: Unit 1/2, Flowers Hill, Bristol, Avon, BS4 5JJ Classification: Powder Coatings **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	94	-	362426 169936
112	**Contemporary Trade Directory Entries** Name: Mdtoxal Ltd Location: Unit 1, Flowers Hill, Bristol, Avon, BS4 5JJ Classification: Anodisers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	94	-	362426 169936
113	**Contemporary Trade Directory Entries** Name: Sanderson Windows Location: 6, Flowers Hill Close, Bristol, BS4 5LF Classification: Window Frames - Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	111	-	362466 170126

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
113	**Contemporary Trade Directory Entries** Name: Sandison Windows Location: 6, Flowers Hill Close, Bristol, BS4 5LF Classification: Window Frames - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	111	-	362466 170126
113	**Contemporary Trade Directory Entries** Name: Alansons Location: 7, Flowers Hill, Bristol, BS4 5JJ Classification: Adhesives, Glues & Sealants **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	127	-	362431 170120
113	**Contemporary Trade Directory Entries** Name: Circle Salvage Location: 7, Flowers Hill, Bristol, BS4 5JJ Classification: Salvage Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	127	-	362431 170120
113	**Contemporary Trade Directory Entries** Name: Source Antiques Location: 5, Flowers Hill Close, Bristol, BS4 5LF Classification: Antiques - Repairing & Restoring **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	132	-	362461 170148
113	**Contemporary Trade Directory Entries** Name: Melhuish & Bateman Ltd Location: 5, Flowers Hill Close, Bristol, BS4 5LF Classification: Sheet Metal Work **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	132	-	362461 170148
113	**Contemporary Trade Directory Entries** Name: J A Till & Co Ltd Location: 1a, Flowers Hill Close, Bristol, BS4 5LF Classification: Bakery Equipment Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	132	-	362461 170148
113	**Contemporary Trade Directory Entries** Name: All Car Spares Location: 1, Flowers Hill Close, Bristol, BS4 5LF Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	137	-	362443 170141
113	**Contemporary Trade Directory Entries** Name: Europa Engineering Services Location: Unit H, Flowers Hill, Bristol, BS4 5JJ Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A13NW (NW)	138	-	362413 170117
113	**Contemporary Trade Directory Entries** Name: Fastframe Trade Location: 3a, Flowers Hill, BRISTOL, BS4 5JJ Classification: Window Frame Manufacturers' Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	173	-	362395 170148
113	**Contemporary Trade Directory Entries** Name: Steve Hill Landrovers Location: 3, Flowers Hill, Bristol, BS4 5JJ Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	173	-	362395 170147
114	**Contemporary Trade Directory Entries** Name: Bristol Honda Location: 834, Bath Road, Brislington, Bristol, BS4 5LQ Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	132	-	362509 170187
115	**Contemporary Trade Directory Entries** Name: Motorline Toyota Bristol South Location: 832, Bath Road, Brislington, Bristol, BS4 5LQ Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	160	-	362455 170182

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
116	**Contemporary Trade Directory Entries** Name: National Tyre And Autocare Location: 830, Bath Road, Brislington, BRISTOL, BS4 5LQ Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	175	-	362458 170204
116	**Contemporary Trade Directory Entries** Name: Supertune Car Clinics Ltd Location: 828, Bath Road, Brislington, Bristol, BS4 5LQ Classification: Car Engine Tuning & Diagnostic Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	187	-	362443 170208
116	**Contemporary Trade Directory Entries** Name: Whitehouse V W Centre Location: The White House, 822, Bath Road, Brislington, Bristol, BS4 5LQ Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	199	-	362432 170213
116	**Contemporary Trade Directory Entries** Name: Garafit Services Ltd Location: Willis House, Flowers Hill, Bristol, BS4 5JJ Classification: Garage Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	202	-	362393 170186
116	**Contemporary Trade Directory Entries** Name: Bathwick Tyres Ltd Location: 820, Bath Road, Brislington, Bristol, BS4 5LQ Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	220	-	362412 170224
117	**Contemporary Trade Directory Entries** Name: Solid Wood Co Location: 821, Bath Road, Brislington, Bristol, Avon, BS4 5NL Classification: Furniture Manufacturers - Home & Office **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	188	-	362557 170257
118	**Contemporary Trade Directory Entries** Name: Toyota World Location: 832 Bath Rd, Brislington, Bristol, Avon, BS4 5LQ Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NE (N)	225	-	362609 170290
119	**Contemporary Trade Directory Entries** Name: Micklegate Engineering Ltd Location: Unit 6, Wilverley Trading Estate, 813-815, Bath Road, Brislington, Bristol, BS4 5NL Classification: Hydraulic Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	276	-	362487 170333
120	**Contemporary Trade Directory Entries** Name: Qualitronics Uk Ltd Location: Unit 1, Wilverley Trading Estate, 813-815, Bath Road, Brislington, Bristol, BS4 5NL Classification: Plant & Machinery Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	282	-	362422 170310
120	**Contemporary Trade Directory Entries** Name: European Friction Industries Ltd Location: Unit 1, Wilverley Trading Estate, 813-815, Bath Road, Brislington, Bristol, BS4 5NL Classification: Brake & Clutch Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	282	-	362422 170310
120	**Contemporary Trade Directory Entries** Name: European Friction Industries Ltd Location: Unit 1/2, Wilverley Trading Estate, 813-815, Bath Road, Brislington, Bristol, Avon, BS4 5NL Classification: Brake & Clutch Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	282	-	362422 170310

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
120	**Contemporary Trade Directory Entries** Name: European Friction Industries Ltd Location: Unit 1-2, Wilverley Trading Estate, 813-815, Bath Road, Brislington, BRISTOL, BS4 5NL Classification: Brake & Clutch Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	282	-	362422 170310
120	**Contemporary Trade Directory Entries** Name: Tastetech Location: Unit 3-6, Wilverley Trading Estate, 813-815, Bath Road, Brislington, Bristol, BS4 5NL Classification: Food Colouring, Flavouring & Additive Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	312	-	362435 170351
120	**Contemporary Trade Directory Entries** Name: Hartwell Jaguar Location: 809-811, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	322	-	362406 170347
120	**Contemporary Trade Directory Entries** Name: Hartwell Jaguar Location: 809-811, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	323	-	362397 170343
120	**Contemporary Trade Directory Entries** Name: Hartwell Jaguar Location: 809-811, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	323	-	362397 170343
121	**Contemporary Trade Directory Entries** Name: The M O T Station Location: 6-8, Emery Road, Bristol, BS4 5PF Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	282	-	362718 170323
122	**Contemporary Trade Directory Entries** Name: Fortune Sydenham Garage Location: 6-8, Emery Road, Bristol, BS4 5PF Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	288	-	362713 170332
122	**Contemporary Trade Directory Entries** Name: M O T & Service Centre Location: 6-8, Emery Road, Bristol, BS4 5PF Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	288	-	362713 170332
122	**Contemporary Trade Directory Entries** Name: Bristol Fan Co Ltd Location: 246, Broomhill Road, Bristol, BS4 5RB Classification: Ventilators & Ventilation Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	332	-	362748 170365
122	**Contemporary Trade Directory Entries** Name: Mike Palmer Location: 306, Broomhill Road, Bristol, BS4 5RG Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	332	-	362748 170365
122	**Contemporary Trade Directory Entries** Name: Mil-Tu-Fit Engineering Location: 246, Broomhill Road, Bristol, BS4 5RG Classification: Industrial Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	332	-	362748 170365

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
122	**Contemporary Trade Directory Entries** Name: Inchbrook Colour Print Location: 10, Emery Road, Bristol, BS4 5PF Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	333	-	362711 170379
122	**Contemporary Trade Directory Entries** Name: Jon'S Location: 5 Emery Rd, Bristol, Avon, BS4 5PF Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	353	-	362681 170408
122	**Contemporary Trade Directory Entries** Name: Commercial World Location: 12, Emery Road, Bristol, BS4 5PF Classification: Commercial Vehicle Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	366	-	362714 170413
122	**Contemporary Trade Directory Entries** Name: P & P Services Location: 12, Emery Road, Bristol, BS4 5PF Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	366	-	362714 170413
122	**Contemporary Trade Directory Entries** Name: Marchway Location: 12, Emery Road, Bristol, BS4 5PF Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	366	-	362714 170413
122	**Contemporary Trade Directory Entries** Name: Lifeshield Pharmacy Location: 12, Emery Road, Bristol, BS4 5PF Classification: Chemists' & Pharmacists' Suppliers & Wholesalers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	366	-	362714 170413
123	**Contemporary Trade Directory Entries** Name: Eco Solutions Ltd Location: Unit 7-8, 7-9, Emery Road, Bristol, Avon, BS4 5PF Classification: Paint & Varnish Stripping **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	290	-	362609 170356
123	**Contemporary Trade Directory Entries** Name: Webb Location: Unit 2, 7-9, Emery Road, Bristol, Avon, BS4 5PF Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	291	-	362609 170356
123	**Contemporary Trade Directory Entries** Name: Big Office Location: 7-9, Emery Road, Bristol, BS4 5PF Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	304	-	362649 170364
123	**Contemporary Trade Directory Entries** Name: Briz Graphics Location: Heston House, Emery Road, Bristol, BS4 5PF Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	310	-	362654 170369
123	**Contemporary Trade Directory Entries** Name: R E Autos Location: Unit 5, 7-9, Emery Road, Bristol, BS4 5PF Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	310	-	362654 170369
124	**Contemporary Trade Directory Entries** Name: Comet Group Plc Location: Brislington Retail Park, Bath Road, Brislington, Bristol, BS4 5NG Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	309	-	362249 170180

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
125	**Contemporary Trade Directory Entries** Name: The Window Glass Company Bristol Ltd Location: 11, Emery Road, Bristol, BS4 5PF Classification: Aluminium Fabricators **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	320	-	362521 170385
125	**Contemporary Trade Directory Entries** Name: Southern P V C Systems Location: Unit 1, Carrick Business Centre 4-5, Bonville Road, Bristol, BS4 5NZ Classification: Window Frame Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	334	-	362472 170389
125	**Contemporary Trade Directory Entries** Name: R Hamilton & Co Ltd Location: Unit 10, Carrick Business Centre, 4-5, Bonville Road, Bristol, BS4 5NZ Classification: Electrical Goods - Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	334	-	362472 170389
125	**Contemporary Trade Directory Entries** Name: R Hamilton & Company Ltd Location: Unit 10, Carrick Business Centre 4-5, Bonville Road, Bristol, BS4 5NZ Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	334	-	362472 170389
125	**Contemporary Trade Directory Entries** Name: Folio Bristol Location: Unit 3-7, Carrick Business Centre, 4-5, Bonville Road, Bristol, Avon, BS4 5NZ Classification: Print Finishers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	334	-	362472 170389
126	**Contemporary Trade Directory Entries** Name: Avon County Choppers Location: Unit 4, 306, Industrial Estate, 242-244, Broomhill Road, Bristol, BS4 5RG Classification: Motor Cycle Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	354	-	362780 170374
126	**Contemporary Trade Directory Entries** Name: Greyhound Recovery Location: Unit 4, 306, Industrial Estate, 242-244, Broomhill Road, Bristol, BS4 5RG Classification: Breakdown and Recovery **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	354	-	362780 170374
126	**Contemporary Trade Directory Entries** Name: Southwest Fasteners Ltd Location: 306, Broomhill Road, Bristol, BS4 5RG Classification: Nuts, Bolts & Fixings **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	376	-	362819 170376
126	**Contemporary Trade Directory Entries** Name: S B I Ltd Location: Unit 7 306 Indust Est,242 Broomhill Rd, Bristol, BS4 5RG Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (NE)	376	-	362818 170376
126	**Contemporary Trade Directory Entries** Name: Power Fixings Location: Crompton House, 240, Broomhill Road, Bristol, BS4 5RG Classification: Hardware **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	406	-	362813 170414
126	**Contemporary Trade Directory Entries** Name: One Stop Mobile Engineering Location: 306 Broomhill Rd, Bristol, Avon, BS4 5RG Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SE (NE)	406	-	362813 170414
127	**Contemporary Trade Directory Entries** Name: Aa Service Centre Location: Brislington Retail Park,Bath Rd, Brislington, Bristol, Avon, BS4 5NG Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	355	-	362261 170272

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
128	**Contemporary Trade Directory Entries** Name: R C Simulations Location: 306, Broomhill Road, Bristol, Avon, BS4 5RG Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	363	-	362767 170391
129	**Contemporary Trade Directory Entries** Name: Central Bodyshop Location: 807, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	365	-	362349 170360
130	**Contemporary Trade Directory Entries** Name: Sportshak Ltd Location: 91, Hungerford Road, Bristol, BS4 5HG Classification: Sports Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	371	-	362135 170043
131	**Contemporary Trade Directory Entries** Name: Dale Maintenance Location: Unit 4, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Timber Preservation Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	390	-	362701 170441
131	**Contemporary Trade Directory Entries** Name: G M B Garages Location: Unit 4 Heston House, 7-9 Emery Road, Bristol, Avon, BS4 5PF Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A18SE (N)	397	-	362693 170450
131	**Contemporary Trade Directory Entries** Name: Tallis Of Bath Location: Unit 1, Birchills Trading Estate, Emery Road, Bristol, Avon, BS4 5PF Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	397	-	362693 170450
131	**Contemporary Trade Directory Entries** Name: Platinum Natural Pet Food & Care Ltd Location: Unit 9-10, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Pet Foods & Animal Feeds **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	400	-	362738 170441
131	**Contemporary Trade Directory Entries** Name: Activ-Air Automation Ltd Location: Unit 8, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Pneumatic Systems & Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	414	-	362739 170455
131	**Contemporary Trade Directory Entries** Name: Activ-Air Automation Ltd Location: Unit 8, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Air Compressors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	414	-	362739 170455
131	**Contemporary Trade Directory Entries** Name: M J N Motors Location: 16, Emery Road, Bristol, BS4 5PF Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	417	-	362692 170471
131	**Contemporary Trade Directory Entries** Name: Adhq Engineering Location: Unit 7, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Engineering Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	421	-	362736 170464
131	**Contemporary Trade Directory Entries** Name: Hygiene Services Ltd Location: Unit 6, Birchills Trading Estate, Emery Road, Bristol, BS4 5PF Classification: Cleaning Services - Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	429	-	362733 170473

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
131	**Contemporary Trade Directory Entries** Name: Global Coatings Location: Heathcote House, 13, Clothier Road, Bristol, BS4 5PS Classification: Metal Finishing Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	443	-	362762 170479
132	**Contemporary Trade Directory Entries** Name: City Heating Spares Location: 13-15, Emery Road, Bristol, BS4 5PR Classification: Central Heating Supplies & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	397	-	362616 170463
132	**Contemporary Trade Directory Entries** Name: Travis Perkins Plc Location: 13-15, Emery Road, Bristol, BS4 5PR Classification: Builders' Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	397	-	362616 170463
133	**Contemporary Trade Directory Entries** Name: Avon Auto Colours Location: 1, Bonville Road, Bristol, BS4 5NZ Classification: Car Paint & Lacquer Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	398	-	362368 170413
133	**Contemporary Trade Directory Entries** Name: P P Engineering Location: Unit 2-3, Bonville Road, Bristol, Avon, BS4 5NZ Classification: Engineers - General **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SW (NW)	432	-	362353 170443
134	**Contemporary Trade Directory Entries** Name: P D Sales Location: The Beeches, Broomhill Road, Brislington, Bristol, BS4 5BF Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	401	-	362922 170317
135	**Contemporary Trade Directory Entries** Name: Car Paint Medics Location: 5, Clothier Road, Bristol, BS4 5PS Classification: Car Paint & Lacquer Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	421	-	362808 170434
135	**Contemporary Trade Directory Entries** Name: Mike & Alan Engineers Location: 5, Clothier Road, Bristol, BS4 5PS Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	421	-	362808 170434
135	**Contemporary Trade Directory Entries** Name: M A Engineers Location: 5, Clothier Road, Bristol, Avon, BS4 5PS Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	421	-	362808 170434
135	**Contemporary Trade Directory Entries** Name: Lindo Location: 238, Broomhill Road, Bristol, BS4 5RG Classification: Musical Instrument - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	433	-	362839 170431
136	**Contemporary Trade Directory Entries** Name: Whites Location: 17-19, Emery Road, Bristol, Avon, BS4 5PF Classification: Machinery - Industrial & Commercial **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	422	-	362572 170491
136	**Contemporary Trade Directory Entries** Name: P H Laminators Location: 21-23, Emery Road, Bristol, BS4 5PF Classification: Print Finishers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	444	-	362548 170512

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
136	**Contemporary Trade Directory Entries** Name: Thermo Logistics Location: 21-23, Emery Road, Bristol, BS4 5PF Classification: Heat Exchangers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	444	-	362548 170512
136	**Contemporary Trade Directory Entries** Name: Grant Motor Sport Location: 21-23, Emery Road, Bristol, BS4 5PF Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	444	-	362548 170512
137	**Contemporary Trade Directory Entries** Name: Brislington Park Location: 803-805, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	434	-	362291 170402
137	**Contemporary Trade Directory Entries** Name: Brislington Park Location: 803-805, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	434	-	362291 170402
137	**Contemporary Trade Directory Entries** Name: Simon Stone Motor Group Location: 803-805, Bath Road, Brislington, Bristol, BS4 5NL Classification: Car Customisation & Conversion Specialists **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	434	-	362291 170402
138	**Contemporary Trade Directory Entries** Name: Folio Location: Unit 7, Carrick Business Centre, 4-5, Bonville Road, Bristol, Avon, BS4 5NZ Classification: Print Finishers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: Hussmann Refrigeration Ltd Location: 4-5, Bonville Road, Bristol, BS4 5NF Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: Hussmann (Europe) Ltd Location: 4-5, Bonville Road, Bristol, BS4 5NF Classification: Refrigeration Equipment - Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: Laidlaw Solutions Ltd Location: 4-5, Bonville Road, Bristol, BS4 5NF Classification: Hardware **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: Hussmann Location: 4-5, Bonville Road, Bristol, BS4 5NF Classification: Refrigeration Equipment - Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: Avon Dies Location: 4-5, Bonville Road, Bristol, Avon, BS4 5NF Classification: Print Finishers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	445	-	362439 170494
138	**Contemporary Trade Directory Entries** Name: European Friction Industries Ltd Location: 6-7, Bonville Road, Bristol, BS4 5NZ Classification: Brake & Clutch Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	459	-	362461 170515

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
138	**Contemporary Trade Directory Entries** Name: European Friction Industries Location: 6-7, Bonville Road, Bristol, Avon, BS4 5NZ Classification: Brake & Clutch Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	459	-	362461 170515
138	**Contemporary Trade Directory Entries** Name: Kool Cars Air Conditioning Ltd Location: The Coach House & Garage,Bonville Rd, Bristol, Avon, BS4 5NZ Classification: Refrigerators & Freezers - Servicing & Repairs **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	474	-	362445 170527
138	**Contemporary Trade Directory Entries** Name: Dunraven Manufacturing Location: 9 Bonville Rd, Bristol, Avon, BS4 5QR Classification: PVC-U Products - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	490	-	362486 170552
139	**Contemporary Trade Directory Entries** Name: Space Workshop Location: 12-13, Yelverton Road, Bristol, BS4 5HP Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	449	-	362154 170290
139	**Contemporary Trade Directory Entries** Name: Springfield Supplies & Projects Location: 12-13, Yelverton Road, Bristol, BS4 5HP Classification: Office Furniture & Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	452	-	362153 170294
140	**Contemporary Trade Directory Entries** Name: Vitcas Ltd Location: 8, Bonville Road, Bristol, BS4 5NZ Classification: Refractory Materials & Supplies **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	456	-	362514 170522
141	**Contemporary Trade Directory Entries** Name: Bristol Galvanizers Ltd Location: 18-20, Emery Road, Bristol, BS4 5QA Classification: Galvanising **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	459	-	362691 170514
142	**Contemporary Trade Directory Entries** Name: Simply Saab Location: 9, Clothier Road, Bristol, BS4 5PS Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	476	-	362792 170502
142	**Contemporary Trade Directory Entries** Name: A P S Body Works Location: 11 Clothier Rd, Bristol, Avon, BS4 5PS Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	478	-	362760 170516
142	**Contemporary Trade Directory Entries** Name: Parts-Asap Location: 9, Clothier Road, Bristol, BS4 5PS Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	479	-	362760 170517
142	**Contemporary Trade Directory Entries** Name: Phoenix Enhancement Services Ltd Location: 11, Clothier Road, Bristol, BS4 5PS Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	479	-	362760 170517
142	**Contemporary Trade Directory Entries** Name: Phoenix Alloys Location: 11, Clothier Road, Bristol, BS4 5PS Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	493	-	362774 170527

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
143	**Contemporary Trade Directory Entries** Name: Euro Motor Servicing E L V Ltd Location: 234-236, Broomhill Road, Bristol, BS4 5RG Classification: Scrap Metal Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: All Euro Servicing Ltd Location: 234-236, Broomhill Road, Bristol, Avon, BS4 5RG Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: Euro Services Ltd Location: 234-236, Broomhill Road, Bristol, Avon, BS4 5RG Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: All Audi Location: 234-236, Broomhill Road, Bristol, Avon, BS4 5RG Classification: Car Breakers & Dismantlers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: All Audi Location: 234-236, Broomhill Road, Bristol, BS4 5RG Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: Euro Services Location: 234-236, Broomhill Road, Bristol, Avon, BS4 5RG Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (NE)	478	-	362887 170453
143	**Contemporary Trade Directory Entries** Name: All Audi Location: 234-236, Broomhill Road, Bristol, BS4 5RG Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	498	-	362902 170467
143	**Contemporary Trade Directory Entries** Name: Euro Motor Servicing E L V Ltd Location: 234-236, Broomhill Road, Bristol, BS4 5RG Classification: Scrap Metal Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	498	-	362902 170467
144	**Contemporary Trade Directory Entries** Name: Charles Ware Location: Clothier Rd, Bristol, Avon, BS4 5PS Classification: Classic Car Specialists **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (NE)	480	-	362836 170486
145	**Contemporary Trade Directory Entries** Name: Hulse Heating Location: 24 Emery Rd, Bristol, BS4 5PF Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	512	-	362648 170574
146	**Contemporary Trade Directory Entries** Name: Redcliffe Magtronics Location: 19, Clothier Road, BRISTOL, BS4 5PS Classification: Electronic Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	515	-	362723 170564
146	**Contemporary Trade Directory Entries** Name: One Holding Location: 19, Clothier Road, Bristol, Avon, BS4 5PS Classification: Bed & Mattress Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	515	-	362723 170564

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
147	**Contemporary Trade Directory Entries** Name: Bradman Lake Group Location: 1-9, Yelverton Road, Bristol, BS4 5HP Classification: Packaging & Wrapping Equipment & Supplies **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	522	-	362070 170295
147	**Contemporary Trade Directory Entries** Name: Eyrevac Prosurf Location: 7-15, Hungerford Road, Bristol, BS4 5HU Classification: Sports Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	533	-	362046 170276
148	**Contemporary Trade Directory Entries** Name: Bains Fireplaces Location: 801, Bath Road, Brislington, Bristol, BS4 5NL Classification: Fireplaces & Mantelpieces **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	535	-	362231 170485
149	**Contemporary Trade Directory Entries** Name: B S Commercial Repairs Ltd Location: 3, Clothier Road, BRISTOL, BS4 5PS Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	546	-	362832 170562
149	**Contemporary Trade Directory Entries** Name: Avalon Trade Finishers Ltd Location: 12-14, Clothier Road, Bristol, BS4 5PS Classification: Print Finishers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	550	-	362824 170570
149	**Contemporary Trade Directory Entries** Name: Miniture Marketing Location: 12-14, Clothier Road, Bristol, Avon, BS4 5PS Classification: Print Finishers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (NE)	550	-	362824 170570
149	**Contemporary Trade Directory Entries** Name: Keith Ashby Print Finishing Ltd Location: 12, Clothier Road, BRISTOL, BS4 5PS Classification: Print Finishers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	550	-	362824 170570
150	**Contemporary Trade Directory Entries** Name: Avalon Mailing Services Location: 16, Clothier Road, Bristol, Avon, BS4 5PS Classification: Print Finishers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	560	-	362785 170594
150	**Contemporary Trade Directory Entries** Name: Avalon (South West) Ltd Location: 16 Clothier Rd, Bristol, Avon, BS4 5PS Classification: Print Finishers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	560	-	362784 170594
151	**Contemporary Trade Directory Entries** Name: Science Systems Space Ltd Location: 23, Clothier Road, Bristol, BS4 5SS Classification: Laboratories **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	576	-	362668 170636
152	**Contemporary Trade Directory Entries** Name: Moores Location: 18, Clothier Road, Bristol, Avon, BS4 5PS Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SE (N)	579	-	362762 170621
152	**Contemporary Trade Directory Entries** Name: Legacy Windows Location: 18, Clothier Road, Bristol, BS4 5PS Classification: Door Manufacturers - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	585	-	362774 170624

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
152	**Contemporary Trade Directory Entries** Name: New Wave Doors Location: 18, Clothier Road, Bristol, BS4 5PS Classification: Door Manufacturers - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	585	-	362774 170624
152	**Contemporary Trade Directory Entries** Name: Charles Ware'S Morris Minor Centre Ltd Location: 20, Clothier Road, Bristol, BS4 5PS Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	602	-	362748 170648
153	**Contemporary Trade Directory Entries** Name: Grafix Screen Printing Location: 21, West Town Lane, Bristol, BS4 5DA Classification: T-Shirts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	587	-	362025 170345
154	**Contemporary Trade Directory Entries** Name: Majestic Carpet Cleaning & Oven Location: 13, Lucas Close, Bristol, BS4 5DG Classification: Oven cleaning **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	591	-	361913 170012
155	**Contemporary Trade Directory Entries** Name: Industrial Gas Services Location: 8, West Town Lane, Bristol, BS4 5BN Classification: Gas Companies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	597	-	362103 170456
155	**Contemporary Trade Directory Entries** Name: J S Promotions Ltd Location: 10 West Town La, Bristol, Avon, BS4 5BN Classification: T-Shirts **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	602	-	362094 170454
156	**Contemporary Trade Directory Entries** Name: Precision Profiles Location: 6-12, Dixon Road, Bristol, BS4 5QW Classification: Engineers - General **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	615	-	362966 170565
157	**Contemporary Trade Directory Entries** Name: Caledonian Windows & Conservatories Location: Brislington Trading Est,24-25 Dixon Rd, Bristol, Avon, BS4 5QW Classification: Window Frames - Sales & Service **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (NE)	661	-	362870 170670
158	**Contemporary Trade Directory Entries** Name: Allseasons Comfort Cooling Location: 35, Fairway, Bristol, BS4 5DF Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	668	-	361837 170038
159	**Contemporary Trade Directory Entries** Name: Cains Mechanical Services Ltd Location: 2, West Town Court, Bristol, BS4 5BH Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	677	-	362037 170503
160	**Contemporary Trade Directory Entries** Name: Brimar Plastics Ltd Location: 18, Dixon Road, Bristol, BS4 5QW Classification: Plastic Products - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	682	-	362883 170688
160	**Contemporary Trade Directory Entries** Name: Farrow Furniture Uk Ltd Location: Unit 6-8, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Furniture Manufacturers - Home & Office **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	729	-	362885 170737

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
160	**Contemporary Trade Directory Entries** Name: Jeff Fishlock Ltd Location: Unit 3, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	729	-	362885 170737
160	**Contemporary Trade Directory Entries** Name: Solid Wood Location: Unit 3, Dixon Business Centre, Dixon Road, Bristol, Avon, BS4 5QW Classification: Furniture Manufacturers - Home & Office **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	729	-	362885 170737
160	**Contemporary Trade Directory Entries** Name: A B Fluid Power Ltd Location: Unit 24-25, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Hydraulic Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	736	-	362931 170726
160	**Contemporary Trade Directory Entries** Name: Duncan Rogers Location: Unit 14, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Hydraulic Equipment & Accessories - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	737	-	362874 170750
160	**Contemporary Trade Directory Entries** Name: Mark 2 Joinery Location: Unit 13, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Joinery Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (NE)	737	-	362874 170750
160	**Contemporary Trade Directory Entries** Name: Bristol Folding & Finishing Ltd Location: Unit 9-11 Dixon Rd, Bristol, Avon, BS4 5QW Classification: Print Finishers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18NE (NE)	737	-	362874 170750
161	**Contemporary Trade Directory Entries** Name: Scotty'S Gates Location: Brislington Trading Estate, 27, Dixon Road, Bristol, BS4 5QW Classification: Gate Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	711	-	362742 170760
162	**Contemporary Trade Directory Entries** Name: Ayrtek Location: Unit 39, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Sports Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	721	-	362955 170696
162	**Contemporary Trade Directory Entries** Name: D & H Cars Location: Hulbert Close, Bristol, BS4 5RY Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	747	-	362971 170717
162	**Contemporary Trade Directory Entries** Name: Euro Car Sales Location: Hulbert Close, Bristol, BS4 5RY Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	747	-	362971 170717
162	**Contemporary Trade Directory Entries** Name: Euro Cooling Services Location: Hulbert Close, Bristol, BS4 5RY Classification: Car Radiator Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	747	-	362971 170717
163	**Contemporary Trade Directory Entries** Name: Classic Home Cuisine Location: 35, Brislington Hill, Bristol, BS4 5BE Classification: Food Products - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	728	-	362095 170623

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
163	**Contemporary Trade Directory Entries** Name: Viridian Distribution Ltd Location: Viridian House, Glenarm Road, Bristol, BS4 4LW Classification: Knitting Yarn Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	728	-	362095 170623
163	**Contemporary Trade Directory Entries** Name: Hollywood Frames Ltd Location: 35 Brislington Hill, Bristol, Avon, BS4 5BE Classification: Window Frame Manufacturers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	728	-	362095 170622
163	**Contemporary Trade Directory Entries** Name: Laseredup Location: 29, Brislington Hill, Bristol, BS4 5BE Classification: Electrolysis **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	743	-	362086 170635
163	**Contemporary Trade Directory Entries** Name: Kaphirchelvan Location: 19, Brislington Hill, Bristol, BS4 5BE Classification: Laundries & Launderettes **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	770	-	362069 170655
164	**Contemporary Trade Directory Entries** Name: Housekeepers Of Bristol Location: 22, Glenarm Walk, Bristol, BS4 4LS Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	747	-	362166 170698
165	**Contemporary Trade Directory Entries** Name: B & T Location: Ironmould Lane, Bristol, Avon, BS4 5SA Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	753	-	363324 170309
165	**Contemporary Trade Directory Entries** Name: Wilf'S Auto Services Location: Unit 1c, Ironmould Lane, Bristol, BS4 5SA Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	756	-	363328 170306
166	**Contemporary Trade Directory Entries** Name: Combined Gas Services Ltd Location: Dixon Business Centre,Dixon Road, Bristol, Avon, BS4 5QW Classification: Mechanical Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	755	-	362850 170778
166	**Contemporary Trade Directory Entries** Name: D C S Bristol Ltd Location: Unit 21, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	755	-	362850 170778
167	**Contemporary Trade Directory Entries** Name: J D Scaffolding Location: 23, West Town Park, Bristol, Avon, BS4 5EA Classification: Scaffolding & Work Platforms **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (W)	763	-	361740 169975
168	**Contemporary Trade Directory Entries** Name: Fountain Print Ltd Location: Unit 28-29, Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	766	-	362957 170746
168	**Contemporary Trade Directory Entries** Name: Fulton Boiler Works Ltd Location: 210, Broomhill Road, Bristol, BS4 4TU Classification: Boiler Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	802	-	363004 170761

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
168	**Contemporary Trade Directory Entries** Name: Fulton Boiler Works Ltd Location: 210, Broomhill Road, Bristol, BS4 4TU Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	802	-	363004 170761
169	**Contemporary Trade Directory Entries** Name: Avon Electromech Ltd Location: Unit 5, Bonville Business Centre, Dixon Road, Bristol, BS4 5QQ Classification: Plant & Machinery Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	772	-	362770 170817
169	**Contemporary Trade Directory Entries** Name: Alan Williams & Co Location: Unit 4, Bonville Business Centre, Dixon Road, Bristol, BS4 5QQ Classification: Ventilators & Ventilation Systems **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	775	-	362763 170822
169	**Contemporary Trade Directory Entries** Name: Bristol Hydra Lifts Location: Unit 3, Bonville Business Centre, Dixon Road, Bristol, BS4 5QQ Classification: Lifting Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	778	-	362756 170826
169	**Contemporary Trade Directory Entries** Name: Wessex Process Systems Ltd Location: Unit 3, Bonville Business Centre, Dixon Road, Bristol, BS4 5QQ Classification: Engineering Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	778	-	362756 170826
169	**Contemporary Trade Directory Entries** Name: Bearing Warehouse Ltd Location: Unit 19-20, Bonville Business Centre, Bonville Road, BRISTOL, BS4 5QR Classification: Bearing Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	800	-	362809 170837
169	**Contemporary Trade Directory Entries** Name: Car Paint Warehouse Ltd Location: Unit 17-18, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Car Paint & Lacquer Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	807	-	362794 170848
169	**Contemporary Trade Directory Entries** Name: Europa (Uk) Ltd Location: Unit 17/18, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Concrete Products **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	808	-	362794 170848
169	**Contemporary Trade Directory Entries** Name: Metro Products Location: Unit 15, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	811	-	362774 170856
169	**Contemporary Trade Directory Entries** Name: Minster Cleaning Services Location: Unit 14, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	812	-	362769 170858
169	**Contemporary Trade Directory Entries** Name: Camtech Mechanical Services Ltd Location: Unit 11,Bonville Business Centre,Bonville Rd, Bristol, BS4 5QR Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	813	-	362765 170860
169	**Contemporary Trade Directory Entries** Name: Tci Automotive Location: Bonville Business Centre,Bonville Rd, Bristol, BS4 5QR Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	833	-	362794 170874

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
169	**Contemporary Trade Directory Entries** Name: Express Car & Commercial Location: 20, Bonville Road, Bristol, BS4 5QH Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	835	-	362772 170881
169	**Contemporary Trade Directory Entries** Name: Edgewood Joinery Location: Unit 24, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Joinery Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	840	-	362798 170881
170	**Contemporary Trade Directory Entries** Name: Rhogar Print Finishers Location: 214-224, Broomhill Road, Bristol, BS4 5RG Classification: Print Finishers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	774	-	363074 170683
171	**Contemporary Trade Directory Entries** Name: Morley Press Location: Regency House, Bonville Road, BRISTOL, BS4 5QH Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	786	-	362727 170839
171	**Contemporary Trade Directory Entries** Name: Avon Equipment Ltd Location: Regency House, Dixon Road, Bristol, BS4 5QW Classification: Machine Tools - Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	786	-	362727 170839
171	**Contemporary Trade Directory Entries** Name: Trowbridge Office Cleaning Services Ltd Location: Regency House,Bonville Road, Bristol, Avon, BS4 5QH Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	786	-	362727 170839
171	**Contemporary Trade Directory Entries** Name: Ford & Sealey Location: Regency House, Dixon Road, Bristol, BS4 5QW Classification: Joinery Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	786	-	362727 170839
171	**Contemporary Trade Directory Entries** Name: Rocktron Location: Regency House, Bonville Road, Bristol, Avon, BS4 5QH Classification: Mineral Merchants **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	786	-	362727 170839
172	**Contemporary Trade Directory Entries** Name: Clay Supplies & Distribution Ltd Location: Ironmould Lane, Bristol, BS4 5SA Classification: Sports Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	796	-	363383 170265
172	**Contemporary Trade Directory Entries** Name: S M J Bristol Car Repairs Location: Unit 22,Ironmould Lane, Bristol, Avon, BS4 5SA Classification: Garage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A14NE (E)	825	-	363415 170254
172	**Contemporary Trade Directory Entries** Name: Baber Transport Ltd Location: Unit 31-32 Ironmould Lane, Bristol, Avon, BS4 5SA Classification: Road Haulage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A14NE (E)	846	-	363430 170280
172	**Contemporary Trade Directory Entries** Name: Bristol Foundry Location: Unit 3, Ironmould Lane, Bristol, Avon, BS4 5SA Classification: Foundries **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	846	-	363430 170280

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
173	**Contemporary Trade Directory Entries** Name: Printgraphicsign Location: 9, Brislington Hill, Bristol, BS4 5BE Classification: T-Shirts **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	798	-	362052 170678
173	**Contemporary Trade Directory Entries** Name: Printgraphicsign Location: 9, Brislington Hill, Bristol, BS4 5BE Classification: T-Shirts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	798	-	362052 170678
173	**Contemporary Trade Directory Entries** Name: H R W Cars Location: The Sq, Brislington, Bristol, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17NE (NW)	834	-	362038 170713
174	**Contemporary Trade Directory Entries** Name: S T P Distribution Ltd Location: Unit 3, Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Classification: Door Manufacturers - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	807	-	362850 170833
174	**Contemporary Trade Directory Entries** Name: Vent-Tech Ltd Location: Unit 32, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Dust Extraction Plant & Equipment Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	855	-	362851 170882
174	**Contemporary Trade Directory Entries** Name: Hydrotech Es Ltd Location: Unit 32, Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Classification: Hygiene & Cleansing Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	855	-	362851 170882
175	**Contemporary Trade Directory Entries** Name: F P Cartons Ltd Location: Ironmould Lane, Bristol, BS4 5SA Classification: Boxes & Cartons **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NE (E)	833	-	363408 170312
176	**Contemporary Trade Directory Entries** Name: Motor Village Location: The Square, Brislington, Bristol, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	835	-	361981 170666
176	**Contemporary Trade Directory Entries** Name: Motor Village Location: The Square, Brislington, BRISTOL, BS4 5AD Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	835	-	361981 170666
176	**Contemporary Trade Directory Entries** Name: Motor Village Location: The Square, Brislington, Bristol, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	835	-	361981 170666
176	**Contemporary Trade Directory Entries** Name: Brislington Motors Co Location: The Square, Brislington, Bristol, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	838	-	361972 170662
176	**Contemporary Trade Directory Entries** Name: J A S Cars Location: The Sq, Brislington, Bristol, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	845	-	361972 170672

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
176	**Contemporary Trade Directory Entries** Name: N & C Auto Services Ltd Location: The Square,Bath Road, Brislington, Bristol, Avon, BS4 5AD Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	856	-	361955 170672
176	**Contemporary Trade Directory Entries** Name: N C Auto Services Ltd Location: The Square, Brislington, Bristol, BS4 5AD Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	858	-	361950 170671
176	**Contemporary Trade Directory Entries** Name: Murco Petroleum Ltd Location: The Square, Brislington, Bristol, BS4 5AD Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	858	-	361950 170671
176	**Contemporary Trade Directory Entries** Name: Brislington Motor Co Location: The Square, Brislington, Bristol, Avon, BS4 5AD Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	858	-	361950 170671
177	**Contemporary Trade Directory Entries** Name: Leman Ltd Location: Unit 28, Ironmould Lane, Bristol, BS4 5SA Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	853	-	363449 170231
177	**Contemporary Trade Directory Entries** Name: Keydale Precision Patterns Location: Unit 19, Ironmould Lane, Bristol, BS4 5SA Classification: Pattern Makers - Industrial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	860	-	363460 170212
177	**Contemporary Trade Directory Entries** Name: D & J Scaffolding Ltd Location: Unit 19a, Ironmould Lane, Bristol, BS4 5SA Classification: Scaffolding & Work Platforms **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NE (E)	867	-	363465 170222
177	**Contemporary Trade Directory Entries** Name: Harvey Litho Ltd Location: Ironmould Lane, Bristol, BS4 5SA Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	881	-	363481 170215
177	**Contemporary Trade Directory Entries** Name: Brislington Fasteners Location: Ironmould Lane, Bristol, Avon, BS4 5SA Classification: Fasteners & Fixing Devices **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NE (E)	893	-	363494 170207
178	**Contemporary Trade Directory Entries** Name: Arrowspeed Ltd Location: Unit 5, Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	856	-	362993 170828
178	**Contemporary Trade Directory Entries** Name: Plastivan Location: Unit 4, Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Classification: PVC-U Products - Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	877	-	362965 170864
179	**Contemporary Trade Directory Entries** Name: Mayborn Engineering 4 X 4 Location: Ironmould La, Bristol, BS4 4TZ Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A19SW (NE)	857	-	363232 170654

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
180	**Contemporary Trade Directory Entries** Name: Publow Press Ltd Location: 23, Bonville Road, Bristol, BS4 5QH Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	873	-	362782 170918
180	**Contemporary Trade Directory Entries** Name: Heli-Tec International Location: 24, Bonville Road, Bristol, BS4 5QH Classification: Precision Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	885	-	362786 170929
180	**Contemporary Trade Directory Entries** Name: M C F Location: 24, Bonville Road, Bristol, Avon, BS4 5QH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	885	-	362786 170929
180	**Contemporary Trade Directory Entries** Name: Label Makers Location: Bonville Rd, Bristol, Avon, BS4 5QH Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18NE (N)	896	-	362794 170939
181	**Contemporary Trade Directory Entries** Name: Murco Service Station Location: The Square, Brislington, Bristol, BS4 5AD Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	880	-	361985 170728
181	**Contemporary Trade Directory Entries** Name: Texaco Location: The Square, Brislington, Bristol, BS4 5AD Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	882	-	361977 170723
182	**Contemporary Trade Directory Entries** Name: National Mobility Location: Unit 1B, Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Classification: Disability Equipment - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	887	-	362855 170915
183	**Contemporary Trade Directory Entries** Name: Simon Engineering Location: Unit 24-25,Ironmould La, Bristol, BS4 5SA Classification: Sheet Metal Work **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A19SE (NE)	888	-	363430 170408
183	**Contemporary Trade Directory Entries** Name: Hth Lifting Ltd Location: Ironmould La, Bristol, BS4 5RS Classification: Crane Hire, Sales & Service **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A19SE (NE)	892	-	363436 170404
184	**Contemporary Trade Directory Entries** Name: Abrichem Composite Ltd Location: Unit 20 Heath Farm Estate,Ironmould Lane, Bristol, Avon, BS4 5RS Classification: Glass Fibre Moulding, Materials & Manufacturers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A19NE (NE)	916	-	363278 170691
185	**Contemporary Trade Directory Entries** Name: Mcarthur Manufacturing Location: 198-202, Broomhill Road, Bristol, BS4 5SF Classification: Fencing Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	932	-	363063 170877
186	**Contemporary Trade Directory Entries** Name: Proper Job Location: 1, Warrington Road, Bristol, BS4 5AQ Classification: Hardware **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	936	-	361847 170679

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
187	**Contemporary Trade Directory Entries** Name: Modern Baking Systems Bristol Ltd Location: 27, Bonville Road, Bristol, BS4 5QH Classification: Bakery Equipment Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	970	-	362846 171003
187	**Contemporary Trade Directory Entries** Name: A F Conveyor Belting Supplies Location: Unit 22 Bonville Rd, Bristol, Avon, BS4 5QH Classification: Conveyors & Conveyor Belts **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	983	-	362838 171018
187	**Contemporary Trade Directory Entries** Name: Swemko Location: 29, Bonville Road, Bristol, BS4 5QH Classification: Cutlery Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	984	-	362872 171011
187	**Contemporary Trade Directory Entries** Name: Nomenca Location: Unit 11, 30, Bonville Road, Bristol, BS4 5QH Classification: Control Panels **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	990	-	362883 171014
188	**Contemporary Trade Directory Entries** Name: Car-Tek Location: Hollywood Rd, Bristol, Avon, BS4 4LF Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17NE (NW)	976	-	361996 170860
189	**Fuel Station Entries** Name: Westgate Service Station Location: Bath Road, Brislington, BRISTOL, BS4 5LQ Brand: OBSOLETE Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Approximate location provided by supplier	A13NE (NE)	133	-	362667 170183
190	**Fuel Station Entries** Name: Brislington Park Service Station Location: 803-805 Bath Road, Bonville Road, Brislington, BRISTOL, BS4 5NL Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Approximate location provided by supplier	A18SW (N)	354	-	362427 170393
191	**Fuel Station Entries** Name: Brislington Motor Services Location: Bristol Hill, Kenneth Road, Brislington, BRISTOL, BS4 5AB Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	858	-	361950 170670
192	**Fuel Station Entries** Name: Brislington Service Station Location: Brislington Service Station, The Square, Brislington, Bristol, BS4 5AD Brand: Texaco Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A17NE (NW)	879	-	361986 170728
193	**Points of Interest - Commercial Services** Name: Cash for Cars Ltd Location: 513 Stockwood Road, Brislington, Bristol, BS4 5LR Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A13SE (SE)	14	8	362580 169985
194	**Points of Interest - Commercial Services** Name: Brislington MOT Centre Location: Unit E3, Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SW (W)	47	8	362463 169976

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
194	**Points of Interest - Commercial Services** Name: Brislington M O T Centre Location: Unit E3, Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SW (W)	48	8	362462 169976
194	**Points of Interest - Commercial Services** Name: Avon Auto Electrical Location: Unit 2B, Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SW (SW)	94	8	362426 169936
194	**Points of Interest - Commercial Services** Name: Avon Auto Electrical Location: Unit 2b, Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SW (SW)	95	8	362425 169936
194	**Points of Interest - Commercial Services** Name: Bristol Peugeot Location: Unit 2B, Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SW (SW)	95	8	362425 169936
195	**Points of Interest - Commercial Services** Name: D W Holley Location: 6 Flowers Hill Close, Bristol, BS4 5LF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NW (NW)	67	8	362470 170074
195	**Points of Interest - Commercial Services** Name: Melhuish & Bateman Ltd Location: 5 Flowers Hill Close, Bristol, BS4 5LF Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A13NW (NW)	69	8	362482 170086
195	**Points of Interest - Commercial Services** Name: A S L Location: 5 Flowers Hill Close, Bristol, BS4 5LF Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A13NW (NW)	69	8	362481 170085
195	**Points of Interest - Commercial Services** Name: Melhuish & Bateman Ltd Location: 5 Flowers Hill Close, Bristol, BS4 5LF Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A13NW (NW)	132	8	362461 170148
195	**Points of Interest - Commercial Services** Name: Melhuish & Bateman Ltd Location: 5 Flowers Hill Close, Bristol, BS4 5LF Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A13NW (NW)	132	8	362461 170148
195	**Points of Interest - Commercial Services** Name: All Car Spares Location: 1 Flowers Hill Close, Bristol, BS4 5LF Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A13NW (NW)	137	8	362443 170141
195	**Points of Interest - Commercial Services** Name: Steve Hill Location: 3 Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	173	8	362395 170147
195	**Points of Interest - Commercial Services** Name: Wash Worx Location: 3 Flowers Hill, Bristol, BS4 5JJ Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A13NW (NW)	173	8	362395 170147

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
195	**Points of Interest - Commercial Services** Name: Steve Hill Landrovers Location: 3 Flowers Hill, Bristol, BS4 5JJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	173	8	362394 170147
195	**Points of Interest - Commercial Services** Name: National Tyres and Autocare Location: 830 Bath Road, Brislington, Bristol, BS4 5LQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	175	8	362457 170204
195	**Points of Interest - Commercial Services** Name: National Tyres and Autocare Location: 830 Bath Road, Brislington, Bristol, BS4 5LQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	175	8	362458 170204
195	**Points of Interest - Commercial Services** Name: Whitehouse V W Centre Location: The White House 822, Bath Road, Brislington, Bristol, BS4 5LQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	199	8	362432 170213
195	**Points of Interest - Commercial Services** Name: Whitehouse V W Centre Location: The White House 822, Bath Road, Brislington, Bristol, BS4 5LQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	199	8	362432 170213
196	**Points of Interest - Commercial Services** Name: The M O T Station Location: 6-8 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (NE)	282	8	362718 170323
197	**Points of Interest - Commercial Services** Name: European Friction Industries Ltd Location: Unit 1-2 Wilverley Trading Estate 813-815, Bath Road, Brislington, Bristol, BS4 5NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NW (NW)	282	8	362422 170310
198	**Points of Interest - Commercial Services** Name: M O T & Service Centre Location: 6-8 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13NE (NE)	288	8	362713 170331
198	**Points of Interest - Commercial Services** Name: Marchway Motor Centre Location: 12 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	366	8	362714 170413
198	**Points of Interest - Commercial Services** Name: Marchwey Motor Centre Location: 12 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	366	8	362714 170413
198	**Points of Interest - Commercial Services** Name: M J N Motors Location: 16 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	413	8	362682 170468
198	**Points of Interest - Commercial Services** Name: M J N Motors Location: 16 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	413	8	362682 170468

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
199	**Points of Interest - Commercial Services** Name: Webb Location: Unit 2 7-9, Emery Road, Bristol, BS4 5PF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A18SE (N)	291	8	362609 170356
199	**Points of Interest - Commercial Services** Name: Webb Distribution Ltd Location: 7-9 Emery Road, Bristol, BS4 5PF Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A18SE (N)	291	8	362653 170350
199	**Points of Interest - Commercial Services** Name: Jon's Auto Cave Location: Unit 5 Heston House, 7-9 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	305	8	362649 170364
199	**Points of Interest - Commercial Services** Name: G M B Garages Location: Unit 4 Heston House, 7-9 Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	310	8	362655 170368
199	**Points of Interest - Commercial Services** Name: R E Autos Location: Unit 5 7-9, Emery Road, Bristol, BS4 5PF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	310	8	362654 170369
200	**Points of Interest - Commercial Services** Name: One Stop Mobile Engineering Location: Unit 3, 306 Industrial Estate 242-244, Broomhill Road, Brislington, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	350	8	362785 170366
200	**Points of Interest - Commercial Services** Name: One Stop Mobile Engineering Location: Unit 3, 306 Industrial Estate 242-244, Broomhill Road, Brislington, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	350	8	362785 170366
200	**Points of Interest - Commercial Services** Name: Avon County Choppers Location: Unit 4, 306 Industrial Estate 242-244, Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	353	8	362779 170373
200	**Points of Interest - Commercial Services** Name: Car Paint Medics Location: Unit, 3 5 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	421	8	362808 170434
200	**Points of Interest - Commercial Services** Name: M A Engineering Location: 5 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	421	8	362808 170434
200	**Points of Interest - Commercial Services** Name: Mike & Alan Engineers Location: 5 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	421	8	362808 170434

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
200	**Points of Interest - Commercial Services** Name: All Audi Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	477	8	362886 170452
200	**Points of Interest - Commercial Services** Name: Euro Motor Servicing Ltd Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	478	8	362887 170453
200	**Points of Interest - Commercial Services** Name: All Audi Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	478	8	362887 170453
200	**Points of Interest - Commercial Services** Name: Euro Services Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	478	8	362887 170453
200	**Points of Interest - Commercial Services** Name: Euro Servicing Ltd Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	478	8	362887 170453
201	**Points of Interest - Commercial Services** Name: Central Bodyshop Location: 807 Bath Road, Brislington, Bristol, BS4 5NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SW (NW)	365	8	362349 170360
201	**Points of Interest - Commercial Services** Name: Central Bodyshop Location: 807 Bath Road, Brislington, Bristol, BS4 5NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SW (NW)	365	8	362348 170360
202	**Points of Interest - Commercial Services** Name: Phoenix Alloys Location: 11 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	478	8	362760 170516
202	**Points of Interest - Commercial Services** Name: Simply Saab Location: 9 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	479	8	362760 170517
202	**Points of Interest - Commercial Services** Name: B S Commercial Repairs Ltd Location: 3 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (NE)	546	8	362832 170562
203	**Points of Interest - Commercial Services** Name: Euro Motor Servicing E L V Ltd Location: 234-236 Broomhill Road, Bristol, BS4 5RG Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A19SW (NE)	497	8	362901 170466
204	**Points of Interest - Commercial Services** Name: Charles Ware's Morris Minor Centre Location: 20 Clothier Road, Bristol, BS4 5PS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18SE (N)	602	8	362748 170648

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
205	**Points of Interest - Commercial Services** Name: Commercial Transfer Ltd Location: 14-16 Brislington Trading Estate, Dixon Road, Bristol, BS4 5QW Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A19SW (NE)	694	8	362933 170677
206	**Points of Interest - Commercial Services** Name: Dcs (Bristol) Ltd Location: Unit 21 Dixon Business Centre, Dixon Road, Bristol, BS4 5QW Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	755	8	362850 170778
206	**Points of Interest - Commercial Services** Name: D C S Bristol Ltd Location: Unit 19 Dixon Business Centre, Brislington, Bristol, BS4 5QW Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	755	8	362850 170778
207	**Points of Interest - Commercial Services** Name: Wilf's Auto Services Location: Unit 1c, Ironmould Lane, Bristol, BS4 5SA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NE (E)	756	8	363328 170306
207	**Points of Interest - Commercial Services** Name: R G S Vehicle Services Location: Ironmould Lane, Bristol, BS4 5SA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NE (E)	759	8	363333 170304
208	**Points of Interest - Commercial Services** Name: G & L Location: Unit 11, Bonville Business Centre, Bonville Rd, Brislington, Bristol, Avon, BS4 5QR Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A18NE (N)	816	8	362758 170864
209	**Points of Interest - Commercial Services** Name: Leman Ltd Location: Unit 28, Ironmould Lane, Bristol, BS4 5SA Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A14NE (E)	853	8	363449 170231
209	**Points of Interest - Commercial Services** Name: Leman Ltd Location: Unit 28, Ironmould Lane, Bristol, BS4 5SA Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A14NE (E)	853	8	363449 170231
209	**Points of Interest - Commercial Services** Name: Baber Transport Ltd Location: Ironmould Lane, Bristol, BS4 5RS Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A14NE (E)	889	8	363481 170254
209	**Points of Interest - Commercial Services** Name: S M J Bristol Car Repairs Location: Unit 22, Ironmould Lane, Bristol, BS4 5SA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NE (E)	893	8	363491 170226
210	**Points of Interest - Commercial Services** Name: N & C Auto Services Ltd Location: The Square, Bath Road, Brislington, Bristol, BS4 5AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	856	8	361955 170672
210	**Points of Interest - Commercial Services** Name: Brislington Motor Services Ltd Location: The Square, Brislington, Bristol, BS4 5AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	858	8	361950 170671

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
210	**Points of Interest - Commercial Services** Name: Brislington Motor Services Location: The Square, Brislington, Bristol, BS4 5AD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	858	8	361950 170670
210	**Points of Interest - Commercial Services** Name: Brislington Service Station Location: Brislington Service Station, The Square, Brislington, Bristol, BS4 5AD Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A17NE (NW)	879	8	361986 170728
210	**Points of Interest - Commercial Services** Name: Car Wash Location: Brislington Service Station, The Square, Brislington, Bristol, BS4 5AD Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A17NE (NW)	879	8	361986 170728
211	**Points of Interest - Commercial Services** Name: Arrowspeed Ltd Location: Unit 5 Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A19NW (NE)	856	8	362993 170828
211	**Points of Interest - Commercial Services** Name: Arrowspeed Location: Unit 5 Bonville Trading Estate, Bonville Road, Bristol, BS4 5QU Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A19NW (NE)	856	8	362993 170828
212	**Points of Interest - Commercial Services** Name: Phoenix Enhancement Services Ltd Location: Unit 31 Bonville Business Centre, Bonville Rd, Bristol, Avon, BS4 5QR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	876	8	362841 170907
212	**Points of Interest - Commercial Services** Name: Three Points Ltd Location: Unit 29-31 Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	878	8	362833 170911
213	**Points of Interest - Commercial Services** Name: Point to Point Solutions Location: 2 Old Pooles Yard, Bristol, BS4 4SL Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A17NE (NW)	943	8	361996 170819
214	**Points of Interest - Manufacturing and Production** Name: Wilverly Industrial Estate Location: BS4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	277	8	362511 170340
214	**Points of Interest - Manufacturing and Production** Name: Wilverley Industrial Estate Location: BS4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	279	8	362458 170325
215	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A18SW (N)	375	8	362556 170444
216	**Points of Interest - Manufacturing and Production** Name: Factory Location: BS4 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A18SE (N)	440	8	362681 170496

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
217	**Points of Interest - Manufacturing and Production** Name: Industrial Estate Location: BS4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	491	8	362123 170318
218	**Points of Interest - Manufacturing and Production** Name: Industrial Estate Location: BS4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	509	8	362059 170247
219	**Points of Interest - Manufacturing and Production** Name: Tanks Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	557	8	362904 170536
219	**Points of Interest - Manufacturing and Production** Name: Wks Location: BS4 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	557	8	362852 170564
219	**Points of Interest - Manufacturing and Production** Name: Wks Location: BS4 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	639	8	362960 170598
220	**Points of Interest - Manufacturing and Production** Name: Rocktron Location: Regency House, Bonville Road, Bristol, BS4 5QH Category: Extractive Industries Class Code: Sand, Gravel and Clay Extraction and Merchants Positional Accuracy: Positioned to address or location	A18NE (N)	786	8	362727 170839
220	**Points of Interest - Manufacturing and Production** Name: Bonville Business Centre Location: BS4 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	796	8	362768 170842
221	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	886	8	362825 170921
221	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	902	8	362807 170942
222	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A19NE (NE)	907	8	363255 170702
222	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A19NE (NE)	911	8	363254 170708
223	**Points of Interest - Manufacturing and Production** Name: Tank Location: BS4 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	941	8	362967 170933

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
224	**Points of Interest - Public Infrastructure** Name: Burial Ground (Disused) Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	78	8	362518 170129
224	**Points of Interest - Public Infrastructure** Name: Burial Ground (Disused) Location: BS4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	80	8	362518 170131
225	**Points of Interest - Public Infrastructure** Name: Brislington Fire Station Location: Brislington Fire Station 14, Bonville Road, Bristol, BS4 5QF Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A18NE (N)	655	8	362662 170717
226	**Points of Interest - Public Infrastructure** Name: Metro Products Location: Unit 15 Bonville Business Centre, Bonville Road, Bristol, BS4 5QR Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A18NE (N)	810	8	362774 170856
227	**Points of Interest - Public Infrastructure** Name: Cemetery Location: BS4 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A18NW (N)	851	8	362293 170874
227	**Points of Interest - Public Infrastructure** Name: Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A18NW (N)	852	8	362286 170873
228	**Points of Interest - Public Infrastructure** Name: Brislington Murco Service Station Location: The Square, Brislington, Bristol, BS4 5AD Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17SE (NW)	858	8	361950 170671
228	**Points of Interest - Public Infrastructure** Name: Brislington Service Station Location: Brislington Service Station, The Square, Brislington, Bristol, BS4 5AD Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	879	8	361986 170728
228	**Points of Interest - Public Infrastructure** Name: Murco Service Station Location: The Square, Brislington, Bristol, BS4 5AD Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	880	8	361985 170728
228	**Points of Interest - Public Infrastructure** Name: Texaco Location: The Square, Brislington, Bristol, BS4 5AD Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	881	8	361984 170728
229	**Points of Interest - Recreational and Environmental** Name: Playground Location: Hungerford Gardens, BS4 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12SE (SW)	387	8	362191 169747
229	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12SE (SW)	388	8	362191 169746

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
230	**Ancient Woodland** Name: Not Supplied Reference: 1418525 Area(m²): 96000.05 Type: Ancient and Semi-Natural Woodland	A19SE (NE)	989	9	363389 170675
231	**Areas of Adopted Green Belt** Authority: Bristol City Council Plan Name: Core Strategy **Status: Adopted** Plan Date: 21st June 2011	A13NE (E)	27	5	362640 170019
232	**Areas of Adopted Green Belt** Authority: Bath and North East Somerset Council Plan Name: Bath And North East Somerset Council **Status: Adopted** Plan Date: 18th October 2007	A9NW (SE)	749	10	363154 169503
233	**Areas of Unadopted Green Belt** Authority: Bath and North East Somerset Council Plan Name: Placemaking Plan **Status: Submission Draft** Plan Date: 12th April 2016	A9NE (SE)	778	10	363303 169662
234	**Local Nature Reserves** Name: Stockwood Open Space Multiple Area: N Area (m2): 529320.49 Source: Natural England Designation Date: 1st January 1995	A13SE (SE)	412	9	362862 169684

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
South Gloucestershire Council - Environmental Services Department	January 2015	Annual Rolling Update
Bristol City Council - Environmental Health Department	March 2014	Annual Rolling Update
Bath and North East Somerset Council - Environmental Health Department	October 2014	Annual Rolling Update
North Somerset Council - Environmental Health Department	September 2014	Annual Rolling Update
Discharge Consents		
Environment Agency - South West Region	April 2017	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - South West Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - South West Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - South West Region	April 2017	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Bath and North East Somerset Council - Environmental Health Department	February 2015	Annual Rolling Update
Bristol City Council - Environmental Health Department	February 2015	Annual Rolling Update
South Gloucestershire Council - Environmental Services Department	January 2015	Annual Rolling Update
North Somerset Council - Environmental Health Department	September 2013	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Bath and North East Somerset Council - Environmental Health Department	February 2015	Annual Rolling Update
Bristol City Council - Environmental Health Department	February 2015	Annual Rolling Update
South Gloucestershire Council - Environmental Services Department	January 2015	Annual Rolling Update
North Somerset Council - Environmental Health Department	March 2015	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Bath and North East Somerset Council - Environmental Health Department	February 2015	Annual Rolling Update
Bristol City Council - Environmental Health Department	February 2015	Annual Rolling Update
South Gloucestershire Council - Environmental Services Department	January 2015	Annual Rolling Update
North Somerset Council - Environmental Health Department	September 2013	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	May 2017	
Pollution Incidents to Controlled Waters		
Environment Agency - South West Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - South West Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - South West Region	March 2013	As notified
Registered Radioactive Substances		
Environment Agency - South West Region	January 2015	
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - South West Region - North Wessex Area	April 2017	Quarterly
Environment Agency - South West Region - Wessex Area	April 2017	Quarterly
Water Abstractions		
Environment Agency - South West Region	April 2017	Quarterly
Water Industry Act Referrals		
Environment Agency - South West Region	April 2017	Quarterly

Data Currency

Agency & Hydrological	Version	Update Cycle
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	August 2015	As notified
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	August 2015	As notified
Source Protection Zones Environment Agency - Head Office	April 2017	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2017	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2017	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	May 2017	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	May 2017	Quarterly
Flood Defences Environment Agency - Head Office	May 2017	Quarterly
OS Water Network Lines Ordnance Survey	April 2017	6 Weekly
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water Suitability Environment Agency - Head Office	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - Head Office	May 2017	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - South West Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - South West Region - North Wessex Area	May 2017	Quarterly
Environment Agency - South West Region - Wessex Area	May 2017	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - South West Region - North Wessex Area	May 2017	Quarterly
Environment Agency - South West Region - Wessex Area	May 2017	Quarterly
Local Authority Landfill Coverage		
Bath and North East Somerset Council - Planning Services Department	May 2000	Not Applicable
Bristol City Council	May 2000	Not Applicable
North Somerset Council	May 2000	Not Applicable
South Gloucestershire Council - Environmental Services Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Bath and North East Somerset Council - Planning Services Department	May 2000	Not Applicable
Bristol City Council	May 2000	Not Applicable
North Somerset Council	May 2000	Not Applicable
South Gloucestershire Council - Environmental Services Department	May 2000	Not Applicable
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites		
Environment Agency - South West Region - North Wessex Area	March 2003	Not Applicable
Environment Agency - South West Region - Wessex Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - South West Region - North Wessex Area	March 2003	Not Applicable
Environment Agency - South West Region - Wessex Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - South West Region - North Wessex Area	March 2003	Not Applicable
Environment Agency - South West Region - Wessex Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	March 2017	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Bristol City Council - Planning Department	April 2015	Annual Rolling Update
Bath and North East Somerset Council - Economic and Environmental Development	February 2016	Annual Rolling Update
North Somerset Council	February 2016	Annual Rolling Update
South Gloucestershire Council - Development Control: Planning	May 2016	Annual Rolling Update
Planning Hazardous Substance Consents		
Bristol City Council - Planning Department	April 2015	Annual Rolling Update
Bath and North East Somerset Council - Economic and Environmental Development	February 2016	Annual Rolling Update
North Somerset Council	February 2016	Annual Rolling Update
South Gloucestershire Council - Development Control: Planning	May 2016	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	April 2017	Bi-Annually
CBSCB Compensation District		
Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas		
The Coal Authority - Property Searches	March 2014	As notified
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	June 2015	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	July 2011	As notified

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	June 2017	Quarterly
Fuel Station Entries Catalist Ltd - Experian	May 2017	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Points of Interest - Commercial Services PointX	December 2016	Quarterly
Points of Interest - Education and Health PointX	December 2016	Quarterly
Points of Interest - Manufacturing and Production PointX	December 2016	Quarterly
Points of Interest - Public Infrastructure PointX	December 2016	Quarterly
Points of Interest - Recreational and Environmental PointX	December 2016	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	May 2017	Bi-Annually
Areas of Adopted Green Belt		
Bath and North East Somerset Council	May 2017	As notified
Bristol City Council	May 2017	As notified
North Somerset Council	May 2017	As notified
South Gloucestershire Council	May 2017	As notified
Areas of Unadopted Green Belt		
Bath and North East Somerset Council	May 2017	As notified
Bristol City Council	May 2017	As notified
North Somerset Council	May 2017	As notified
South Gloucestershire Council	May 2017	As notified
Areas of Outstanding Natural Beauty		
Natural England	January 2017	Bi-Annually
Environmentally Sensitive Areas		
Natural England	January 2017	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	June 2017	Bi-Annually
Marine Nature Reserves		
Natural England	January 2017	Bi-Annually
National Nature Reserves		
Natural England	January 2017	Bi-Annually
National Parks		
Natural England	February 2017	Bi-Annually
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	Annually
Ramsar Sites		
Natural England	January 2017	Bi-Annually
Sites of Special Scientific Interest		
Natural England	January 2017	Bi-Annually
Special Areas of Conservation		
Natural England	January 2017	Bi-Annually
Special Protection Areas		
Natural England	January 2017	Bi-Annually
World Heritage Sites		
English Heritage - National Monument Record Centre	May 2017	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	The Coal Authority
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Peter Brett Associates	pba peterbrett

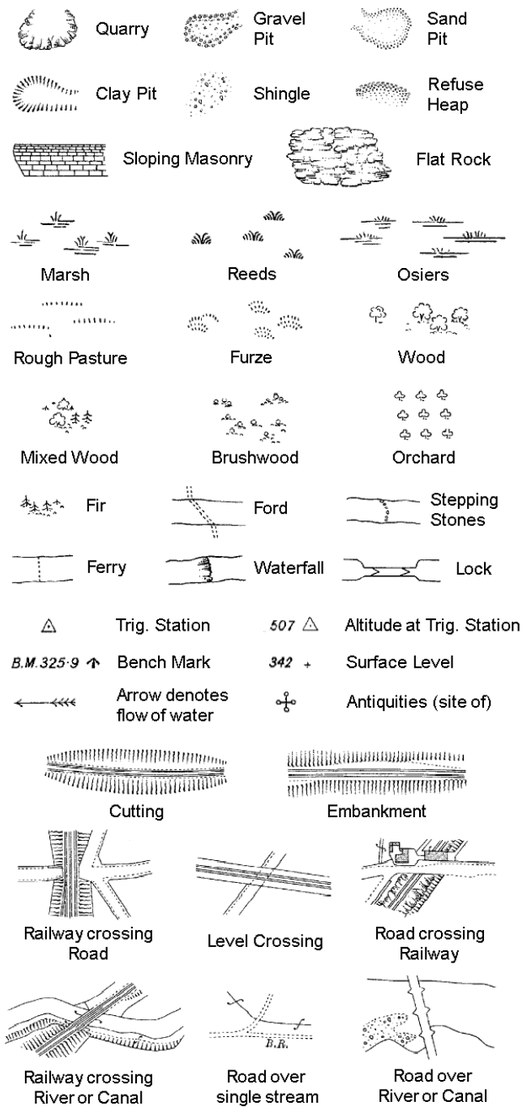
Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: [redacted]
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Bristol City Council - Environmental Health Department** Brunel House, St Georges Road, Bristol, Avon, BS1 5UY	Telephone: 0117 922 3810 Fax: 0117 922 3886
4	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 023 8079 2000 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
5	**Bristol City Council** The Council House, College Green, Bristol, Avon, BS1 5TR	Telephone: 0117 922 2000 Fax: 0117 922 3886 Website: www.bristol-city.gov.uk
6	**Bath and North East Somerset Council - Planning Services Department** Trimbridge House, Trim Street, Bath, BA1 2DP	Website: www.bathnes.gov.uk
7	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk
8	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: [redacted]
9	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: [redacted]
10	**Bath and North East Somerset Council** Guildhall, High Street, Bath, BA1 5AW	Telephone: 01225 477000 Fax: 01225 477489 Website: www.bathnes.gov.uk
11	**South Gloucestershire Council** Council Offices, Castle Street, Thornbury, Bristol, Gloucestershire, BS12 1HF	Telephone: 01454 868686 Fax: 01454 419754 Website: www.southglos.gov.uk
12	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: [redacted]
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: [redacted]

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

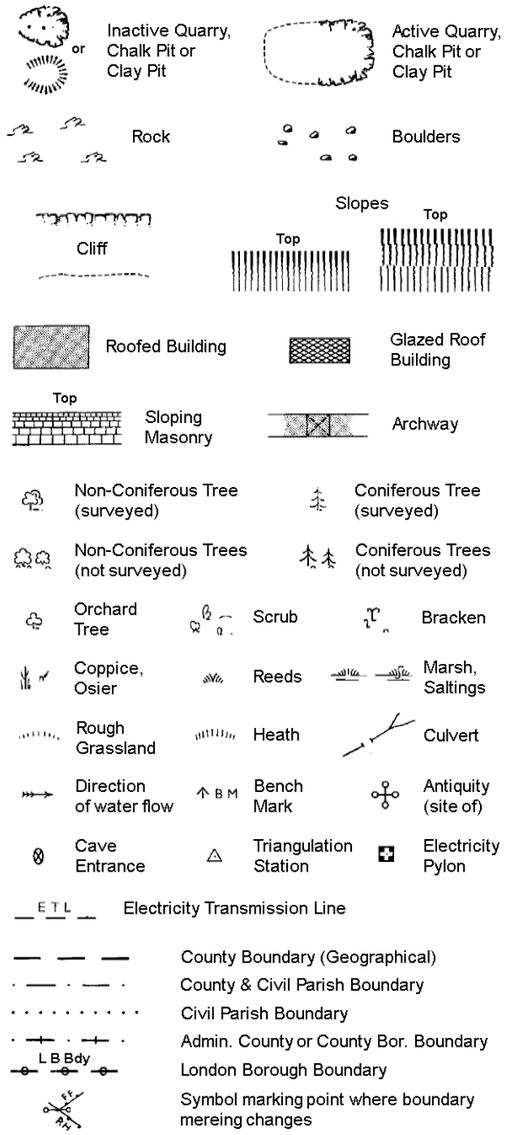
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B.P B.S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

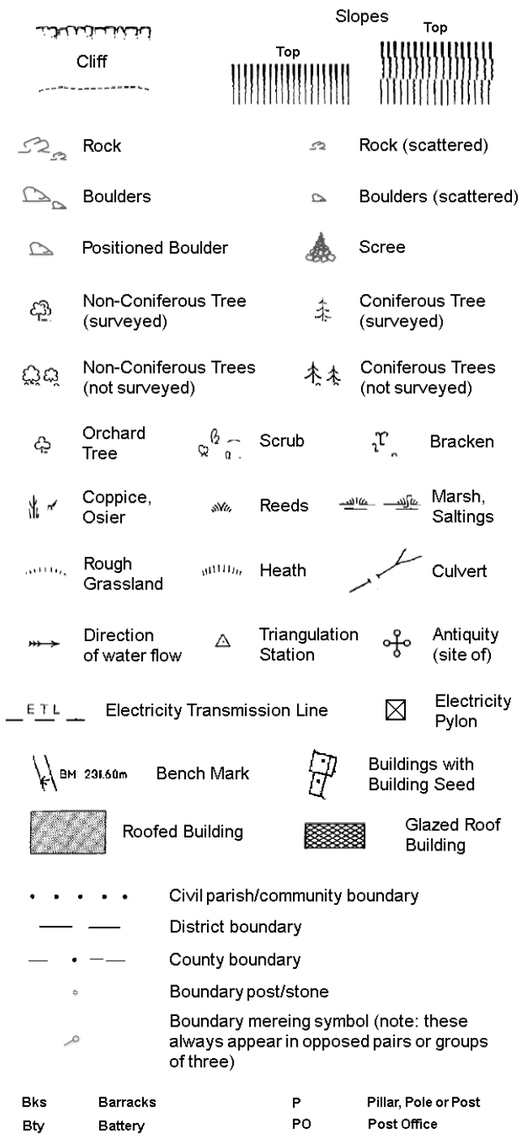
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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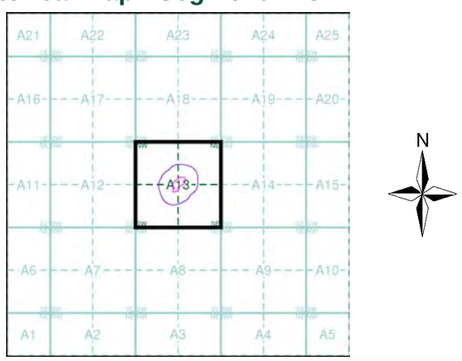
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Somerset	1:2,500	1884 - 1886	2
Gloucestershire	1:2,500	1884	3
Gloucestershire	1:2,500	1904	4
Somerset	1:2,500	1904	5
Gloucestershire	1:2,500	1916	6
Somerset	1:2,500	1916	7
Somerset	1:2,500	1931	8
Ordnance Survey Plan	1:1,250	1947 - 1960	9
Ordnance Survey Plan	1:1,250	1950 - 1976	10
Ordnance Survey Plan	1:1,250	1960 - 1965	11
Ordnance Survey Plan	1:2,500	1961	12
Ordnance Survey Plan	1:1,250	1965	13
Ordnance Survey Plan	1:2,500	1970	14
Additional SIMs	1:1,250	1984 - 1988	15
Additional SIMs	1:1,250	1989	16
Ordnance Survey Plan	1:1,250	1991	17
Large-Scale National Grid Data	1:1,250	1992	18
Large-Scale National Grid Data	1:1,250	1994	19
Large-Scale National Grid Data	1:1,250	1994	20
Historical Aerial Photography	1:2,500	1999	21

Historical Map - Segment A13



Order Details

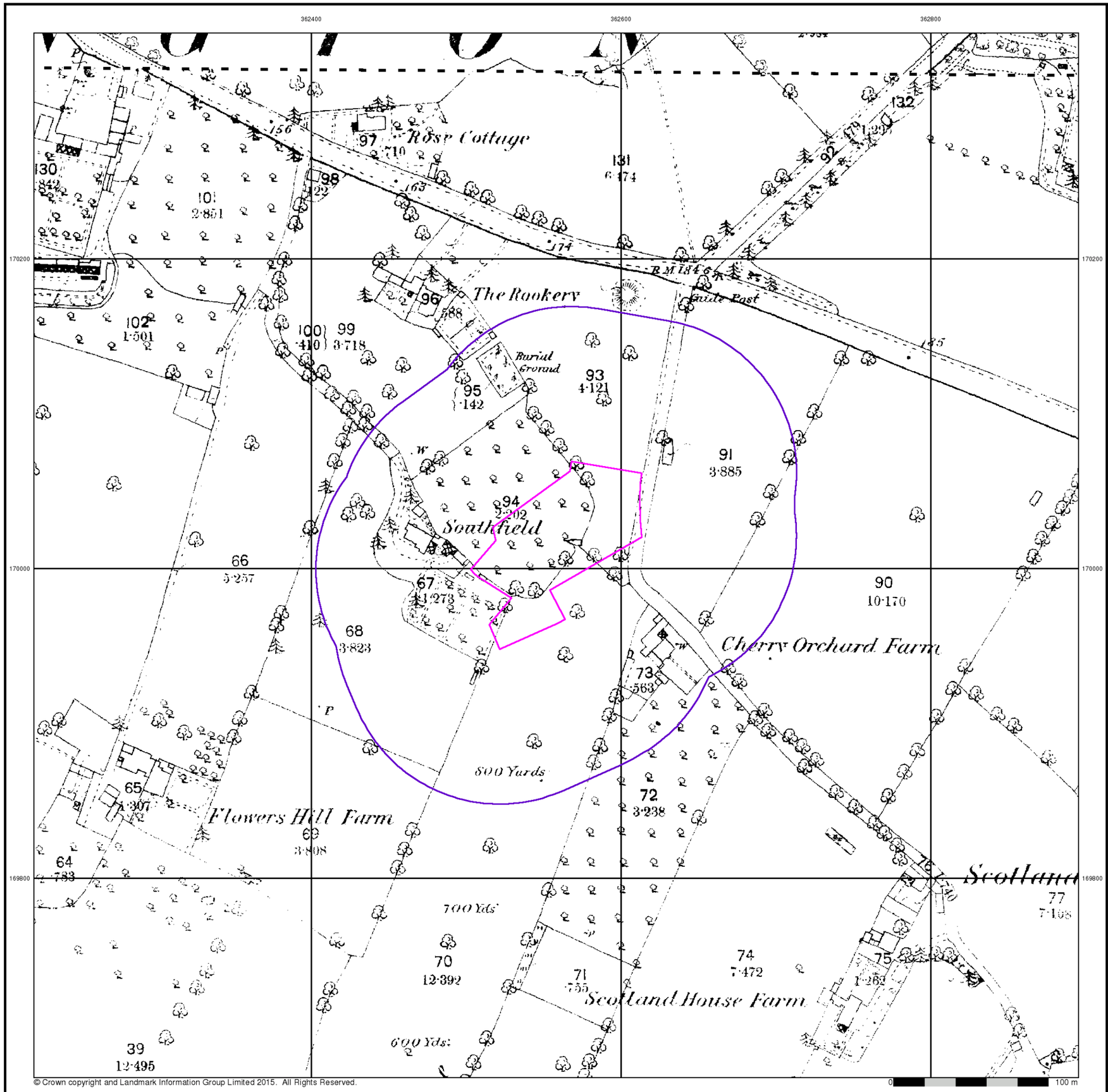
Order Number: 132920054_1_1
Customer Ref: 732959
National Grid Reference: 362560, 170010
Slice: A
Site Area (Ha): 0.69
Search Buffer (m): 100

Site Details

Ground Floor, 515-517, Stockwood Road, Brislington, BRISTOL, BS4 5LR

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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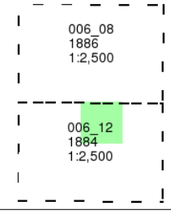
Somerset

Published 1884 - 1886

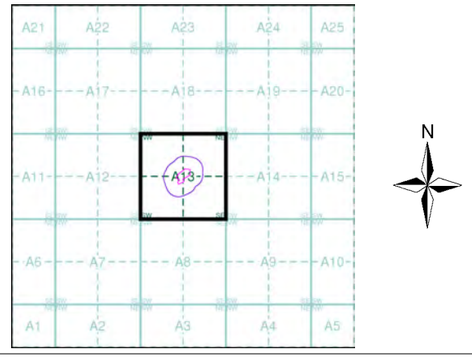
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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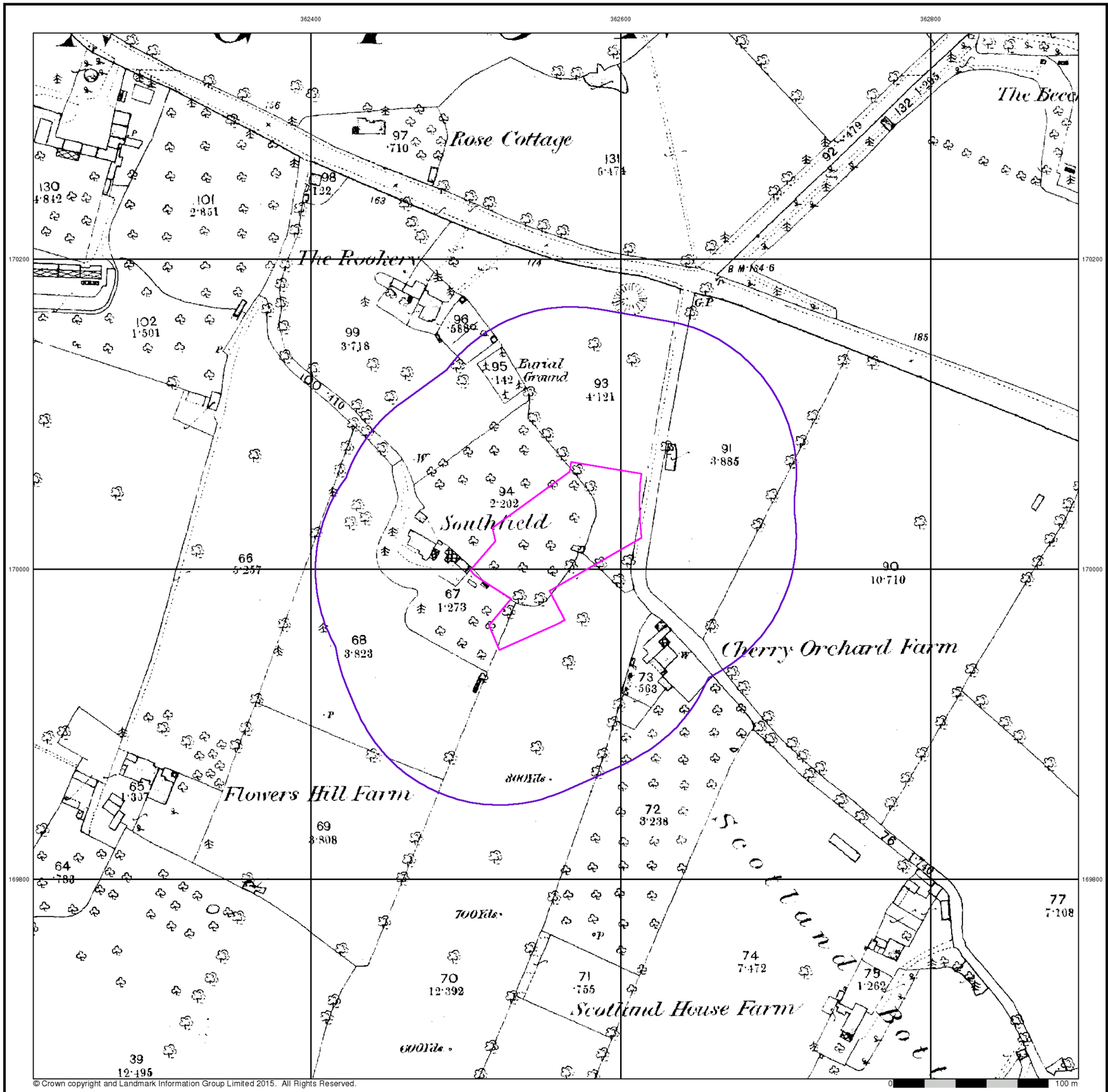

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Gloucestershire

Published 1884

Source map scale - 1:2,500

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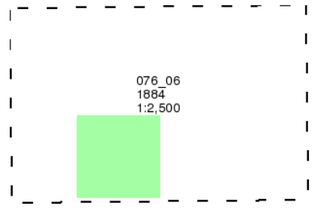
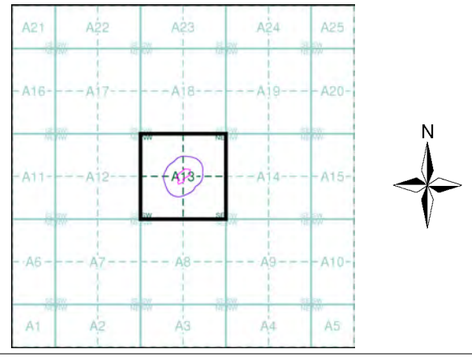


Historical Map - Segment A13



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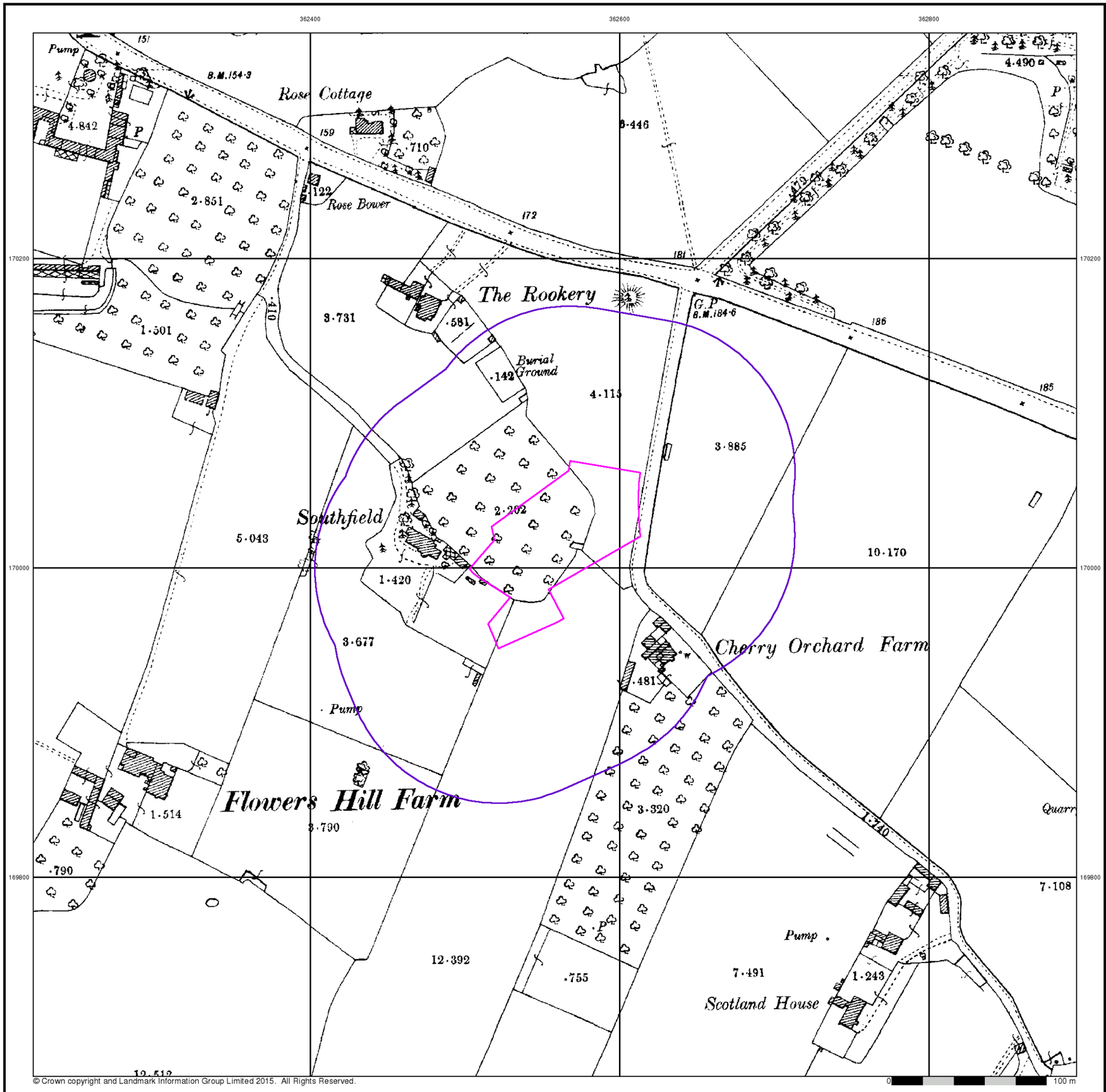

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A Member of the RSK Group plc

Gloucestershire

Published 1904

Source map scale - 1:2,500

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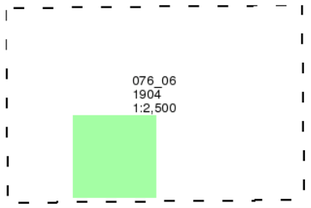
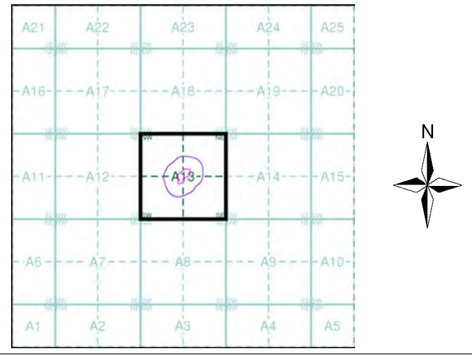


Historical Map - Segment A13



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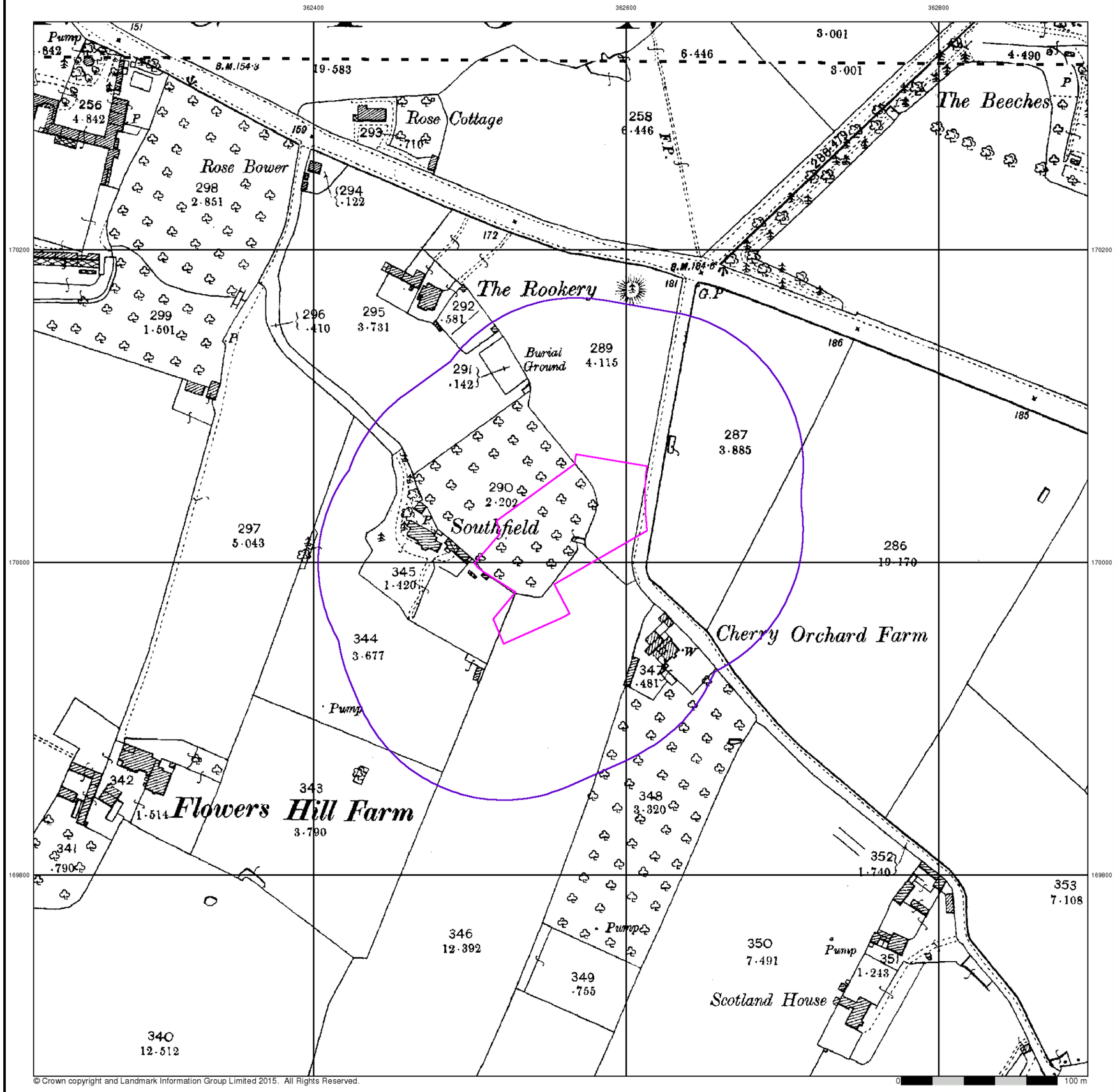

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A Member of the RSK Group plc

Somerset

Published 1904

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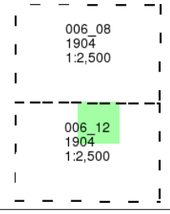
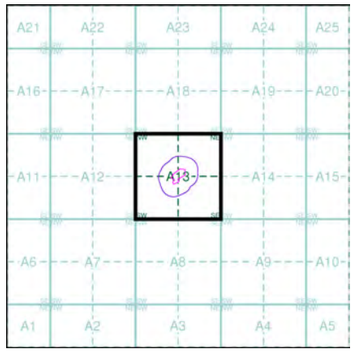


Historical Map - Segment A13



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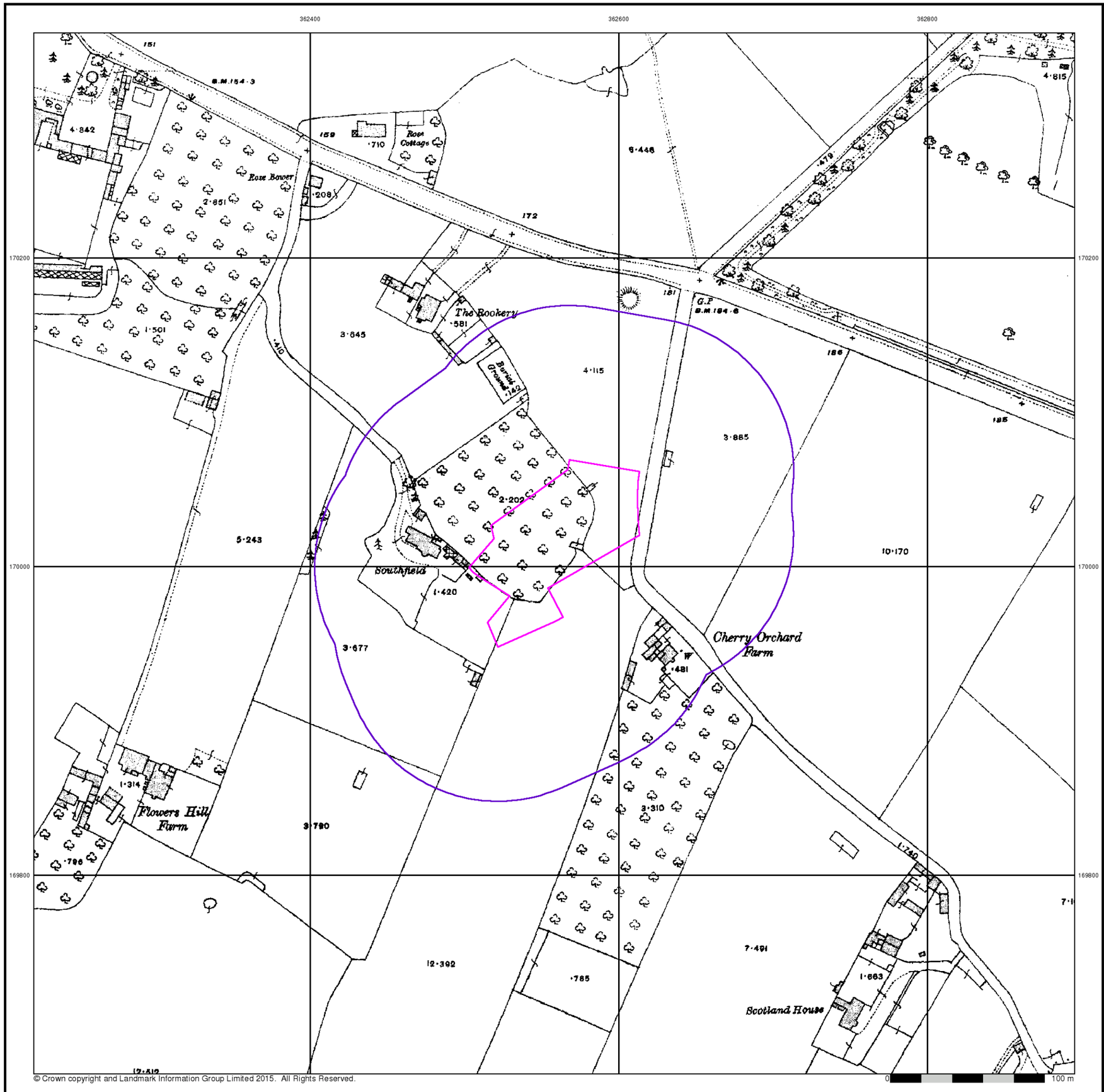

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Gloucestershire

Published 1916

Source map scale - 1:2,500

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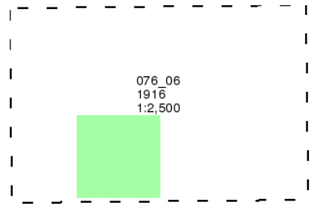
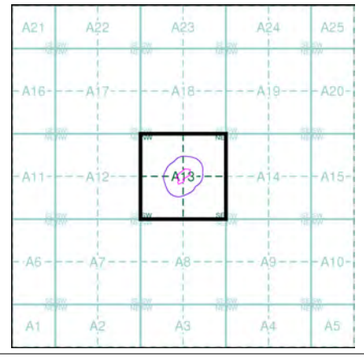


Historical Map - Segment A13



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